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new trail

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Looking at the Stars
The University's new telescope

Archaeology in Italy
An interdisciplinary investigation at San Giovanni di Ruoti, Basilicata

CKUA: Fifty years of growth for the University's own station

The Emergence of Women in Medicine

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New Trail is the University of Alberta magazine. Its purpose is not only to maintain contact with the alumni, staff, and friends of the University, but to foster their interest in and concern about the University and higher education generally.

Comment. We invite your responses to *New Trail* articles for inclusion in the comment column. Submissions should not exceed 3,000 words, typewritten and double-spaced. Responses will be accepted for publication at the discretion of the Editor and the Editorial Board, who also reserve the right to select and edit comments.

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Postscript

In "Comment" printed in the last issue of *New Trail,* its author, Toh Swee-hin, was erroneously described as a doctoral student in the Department of Educational Administration, when in fact he is a doctoral student in the Department of Educational Foundations. He also wishes the following list of references, on which he based his "Comment," to be included.

Amin, Samir. 1974. Accumulation and development: a theoretical model. *Review of African Political Economy* 1: 9-27.

Cleaver, Harry M., Jr. 1972. The contradictions of the Green Revolution. *American Economic Review* 62(2): 177-186.

Frank, Andre Gunder. 1969. *Latin America: Underdevelopment or Revolution.* New York: Monthly Review.

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Hildebrand, George C., and Gareth Porter. 1976. *Cambodia: Starvation and Revolution.* New York: Monthly Review.

McGarry, Michael G. 1976. The taboo resource. The use of human excreta in Chinese agriculture. *The Ecologist* 6(4): 150-154.

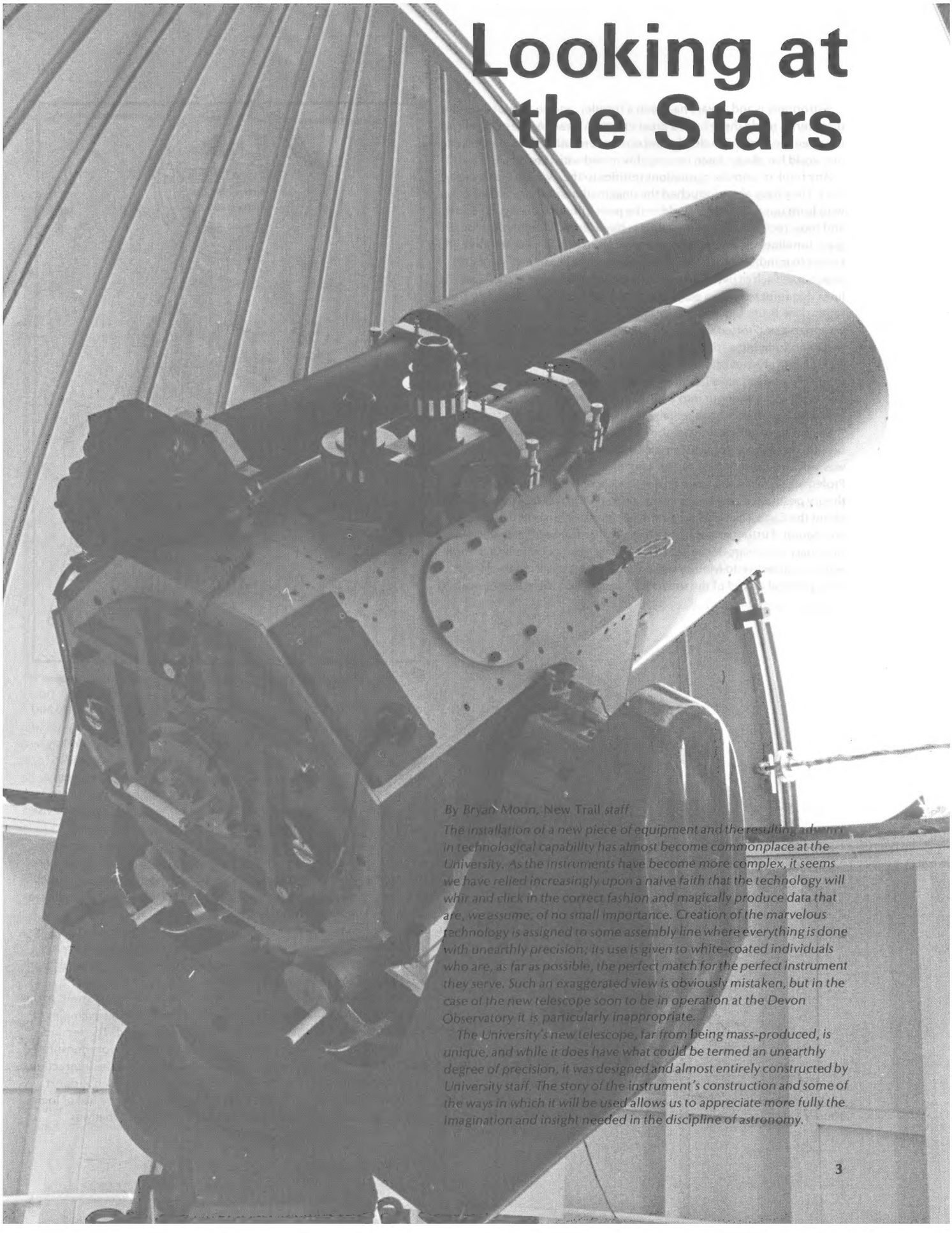
Prasad, C.R., K.K. Prasad, and A.K.N. Reddy. 1974. Biogas plants: prospects, problems, and tasks. *Economic and Political Weekly* 9(32-34): 1347-1364.

Skorov, Georgy. 1973. The Green Revolution and social progress. *World Development* 1(2): 13-21.

Stavis, Ben. 1975. Why China is not a basket case. *China Notes* 13(2): 13-15.

Pictured on the front cover is the Whirlpool Galaxy. Our solar system is thought to be a small part of a galaxy which has a similar spiral configuration. The Whirlpool Galaxy is approximately nine million light years away from us, and approximately fifty thousand light years across.

Looking at the Stars



By Bryan Moon, New Trail staff

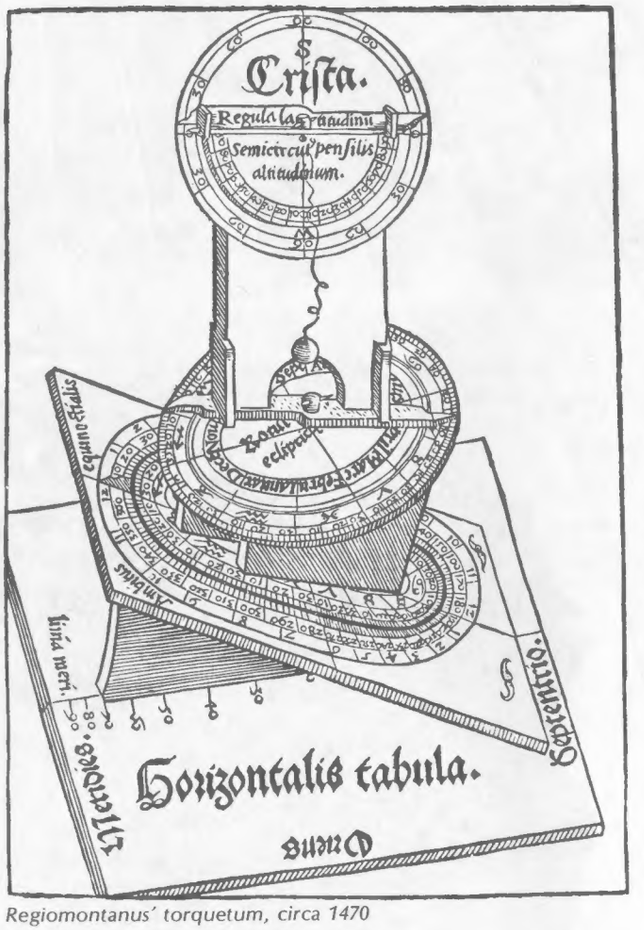
The installation of a new piece of equipment and the resulting advance in technological capability has almost become commonplace at the University. As the instruments have become more complex, it seems we have relied increasingly upon a naive faith that the technology will whir and click in the correct fashion and magically produce data that are, we assume, of no small importance. Creation of the marvelous technology is assigned to some assembly line where everything is done with unearthly precision; its use is given to white-coated individuals who are, as far as possible, the perfect match for the perfect instrument they serve. Such an exaggerated view is obviously mistaken, but in the case of the new telescope soon to be in operation at the Devon Observatory it is particularly inappropriate.

The University's new telescope, far from being mass-produced, is unique, and while it does have what could be termed an unearthly degree of precision, it was designed and almost entirely constructed by University staff. The story of the instrument's construction and some of the ways in which it will be used allows us to appreciate more fully the imagination and insight needed in the discipline of astronomy.

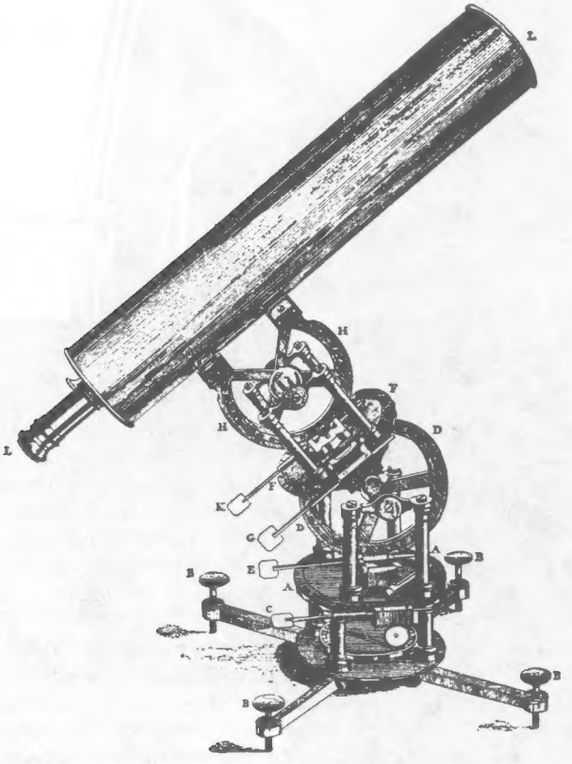
Astronomy is and always has been a frontier, and sooner or later the discoveries made there have a great effect on us all. A telescope allows us to see the stars more clearly, and our understanding of ourselves and our world has always been inextricably mixed with the stars.

Any book of popular quotations testifies to the evocative power of stars. They have always touched the imaginations of those individuals who form our view of the world — the poets, philosophers, visionaries, and most recently, the scientists. Stars have served as metaphor for great loneliness, great beauty, and great joy. The star of Bethlehem comes to mind, or on a level of far less magnitude, we may think of a movie star. Each of us has a few poorly remembered and out-of-context lines that refer to stars in our stock of quotations. Shakespeare's "The fault, dear Brutus, is not in our stars . . ." or Emerson's "Hitch your wagon to a star" often surface, and having risen to the realm of cliché, evoke nothing but a stifled yawn or an uncomfortable silence. Significantly, however, it is the reference to the stars and not the stars themselves which have lost their ability to engage us imaginatively. We have only to wander out into a starry night to realize that, literally and figuratively, the stars have remained above it all.

Scientists, of course, look at the stars as a source of other things besides metaphor. Copernicus saw evidence in the stars that the Earth was not the fixed centre of the Universe. Before Copernicus, the Ptolemaic idea was the most accepted view of the Universe. Ptolemy's theory postulated that the heavens were spherical in form and rotated about the Earth, thus explaining the rising and setting of the stars, Sun, and Moon. Furthermore, he postulated that the Earth was the stationary centre around which the spheres moved. Ptolemy's theory was very attractive to Medieval theologians because it allowed them to see a physical model of the universe that matched the metaphysical



Regiomontanus' torquetum, circa 1470



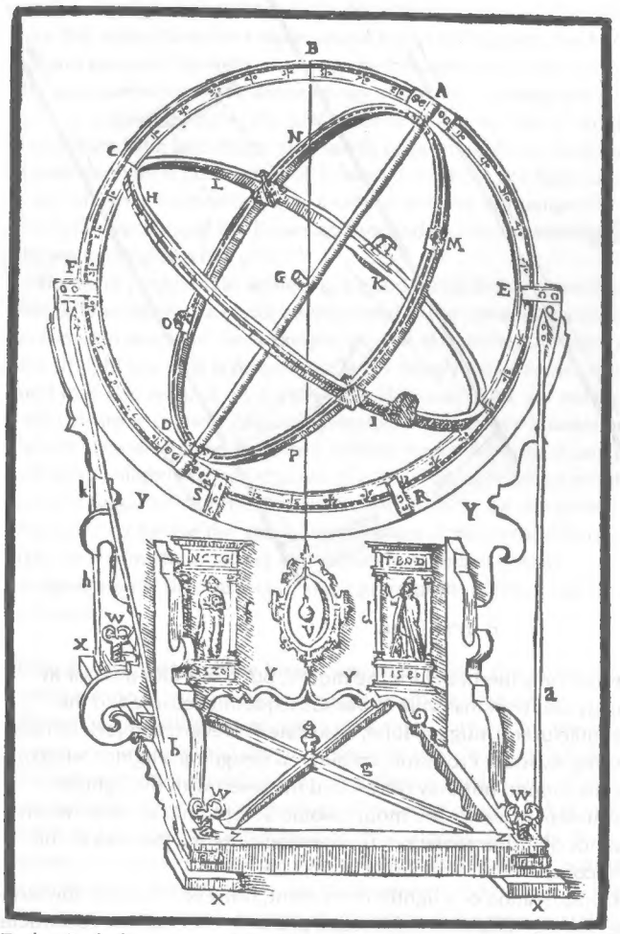
Short's Equatorial Mount

model they had constructed: man and his world were the centre and sole object of creation.

In many ways Copernicus' view was a reconstruction of Ptolemy's theory which, by the end of the fifteenth century, had become cumbersome because of the attempts to make it fit the observed motion of the stars and planets. By assuming that the Earth moved and the Sun was the centre of the universe, Copernicus was able to devise a new theory which was much simpler and explained far more.

It has been said that Copernicus set the Earth in motion, and in a sense he did because for the first time man's image of his place in the Universe was one that included movement. In any case, it is undeniable that men's imaginations were set in motion. While Copernicus did not suffer the consequences of his theory, one of his students did. Giordano Bruno, almost a century after Copernicus' death, drew the attention of the Church to the consequences of the new theory for Church doctrine. Bruno was burned at the stake, and Copernicus' work was banned and remained so until 1822.

Such a brief reference to Copernicus is useful for two reasons. In the first place, Copernican theory is one of the most striking examples of how astronomy can affect our way of seeing the world. The second reason that it is useful to recall Copernicus is that his theory constituted only the initial step of the scientific process. Science is the interaction between theory and the empirical, observable facts which support, disprove, or refine the theory. Copernicus, mainly by the use of logic and mathematics, presented a possibility to the world that was



Tycho Brahe's equatorial armillary, 1580

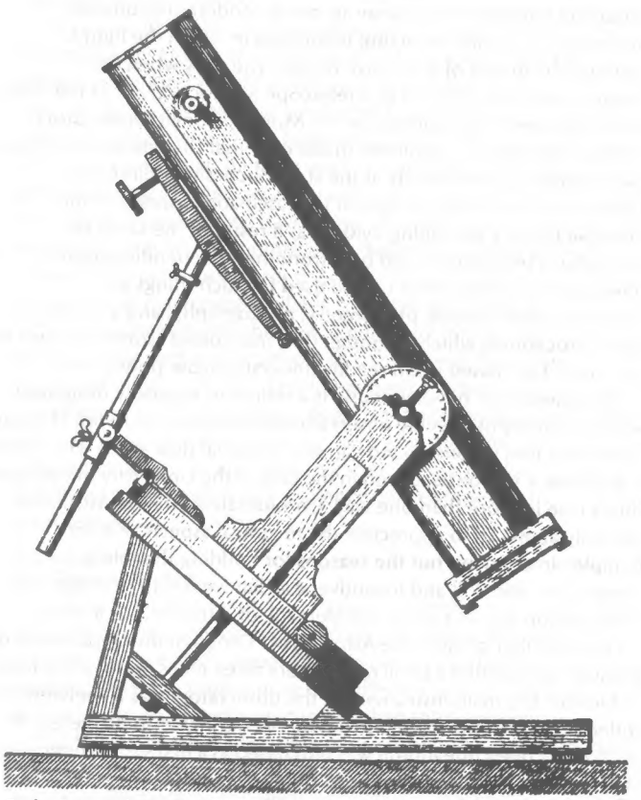
tantalizing to some and frightening to others. It remained for Galileo to bring experimental support for the theory. In 1609, acting upon reports from the Netherlands, Galileo constructed the instrument that brought observational confirmation to many aspects of Copernican theory. The instrument he constructed was, of course, the telescope.

"... it is a most beautiful and delightful sight to behold the body of the Moon, which is distant from us nearly sixty semidiameters of the Earth, as near as if it was at a distance of only two of the same measures; so that the diameter of this same Moon appears about thirty times larger, its surface about nine hundred times, and its solid mass about 27,000 times larger than when it is viewed only with the naked eye; and consequently anyone may know with the certainty that is due to the use of our sense, that the Moon does not possess a smooth and polished surface but one that is rough and uneven. ..."
The Sidereal Messenger, Galileo Galilei

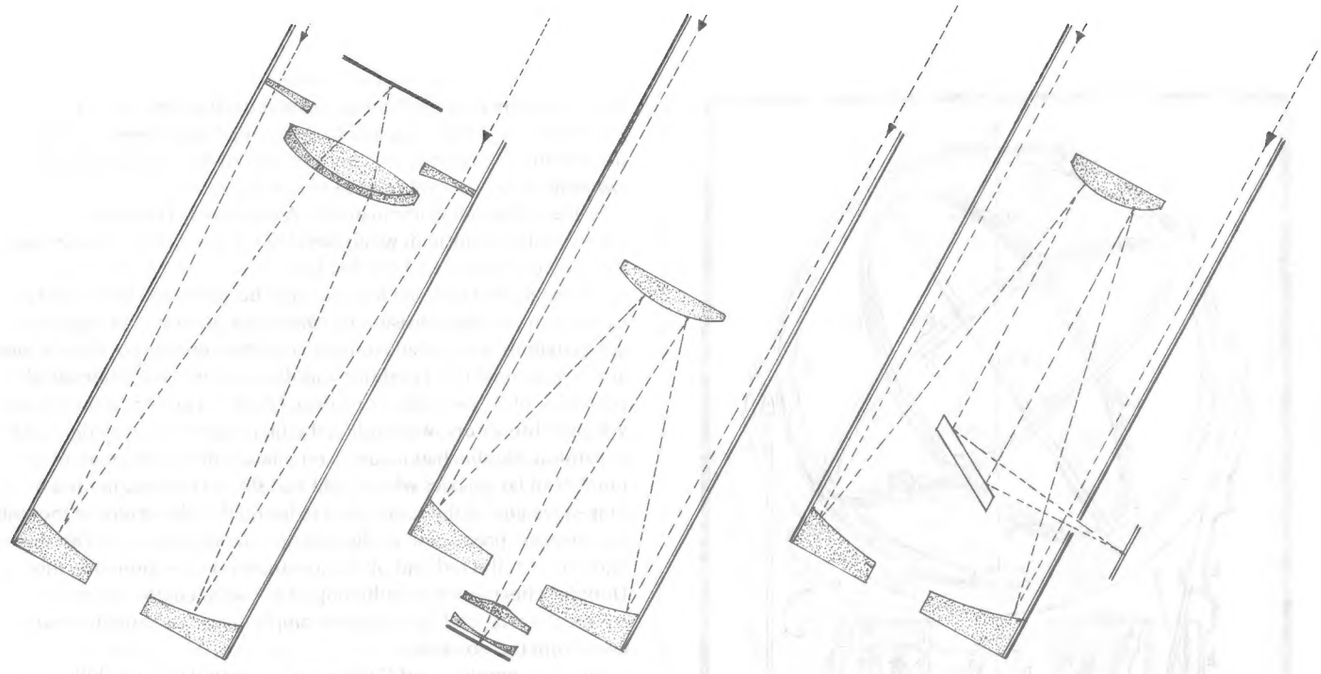
Galileo's delight and wonder upon first looking through his telescope and discovering that things were not as they previously seemed to be is probably duplicated every time a person first looks through the eyepiece of a telescope. To "know with the certainty that is due to the use of our sense" is the great contribution of the telescope to astronomy, a contribution which moved the discipline from the realm of speculation to the realm of science. In affirming and refining the understanding that Copernicus arrived at through the use of logic, mathematics, and imagination, Galileo and his telescope completed the process that has characterized astronomy up to the present day. Since Galileo and Copernicus, the process has taken place many, many times, but perhaps one of the most pertinent examples is to be found early in this century.

In 1922 a Russian mathematician, Alexander A. Friedman, discovered that Einstein, when carrying out his mathematical proof for a static universe, had divided both sides of an equation by a quantity which, Friedman found, could become zero under certain circumstances. Since division by zero is not permitted in algebraic computations, a non-static universe was theoretically possible. Almost at the same time that Friedman was discovering the mathematical possibility of an expanding universe, Edwin P. Hubble, at the Mount Wilson Observatory, was finding the first experimental evidence of expansion. Hubble had made a compilation of the distances of a number of far galaxies whose light had shifted towards the red or long-wave end of the spectrum. He found that the extent of the shift was in direct proportion to the galaxies' distance from us. The shift of light towards the red end of the spectrum was interpreted as the Doppler effect — the lengthening of the wavelengths when the source of radiation (light or, for example, a train whistle) is moving away from the observer.

Just as Copernicus and Galileo had suggested the possibility of an Earth that is not static, Friedman and Hubble presented the possibility that the Universe itself is not static. The scope of such issues is, of course, enormous and highly complex, but two things are obvious. Astronomy requires a great breadth of imagination, but because it is a science it also requires observational verification of the theories that are arrived at by the use of logic, mathematics, and insight. The poet can see a reflection of himself in the stars, but the telescope obliges



Early Foucault Reflector



a. *Reflector-corrector prime focus camera* b. *f/8 focus* c. *f/18 focus*

the scientist to look at the stars themselves.

Although modern optical telescopes are far more complex than the instrument which Galileo constructed, essentially they perform the same basic function: the collection of light. Galileo constructed a refracting telescope which gathers and focuses light by means of lenses; when most of us think of a telescope it is the image of the refracting telescope that comes to mind. Modern instruments, however, are usually reflecting telescopes in which the light is gathered by means of a concave mirror. The days when the astronomer sat at one end of a telescope and looked out at the stars are almost over. For example, at the Mount Palomar Observatory many people are disappointed to discover that the telescope is never used simply to look directly at the stars. Such disappointment, however, is short-lived in light of the fascinating aspects of the universe that are becoming evident as a result of the kinds of procedures being employed by astronomers. Depending upon a telescope's construction it can be used for such things as spectrographic analysis, photometry, photography, and a variety of other procedures which, although they may sound esoteric to most of us, are, in fact, based upon readily understandable principles.

The University's new telescope is a reflector, expressly designed with the variety of possible observational techniques in mind. The way in which a tool is constructed can reveal a great deal about who made it and how it will be used, and in the case of the University's telescope this is true in more than one way. Consideration of its construction not only allows us to appreciate the technical aspects of a very complex instrument, but the reasons for building the telescope on campus and the skill and inventiveness that went into its design and construction are, in a sense, emblematic of astronomy as a whole.

For a number of years the Astrophysics Group of the Department of Physics has operated a small observatory three miles north of the town of Devon. The main instrument at the observatory was a twelve-inch reflector (that is, the main mirror was twelve inches in diameter). In 1973 a new telescope mount was purchased as a first step in upgrading the facilities. The next step was to acquire a new telescope for the mount. A sixteen-inch reflector was ordered, but when it arrived it was not only too heavy for the mount, but it was also inferior in quality and workmanship. It was subsequently returned to the manufacturer. Douglas Hube, Associate Professor, and Jack Winzer, Visiting Assistant Professor, considered designing a lighter telescope for the mount, but they discovered that even with the lightest instrument possible, the mount would accept only another twenty pounds of instrumentation, thus severely limiting the uses of the telescope.

Consideration of a lighter instrument, however, made it obvious to the two men that both a telescope and a mount could be constructed on campus, and this is what they set out to do. The decision about the final size of the telescope was arrived at by contending with three constraints. There was a limit to the amount of funds available, a limit to the size of work that could be undertaken with University facilities, and the finished telescope had to fit inside the existing observatory, a dome thirteen feet in diameter on the inside. They decided that a twenty-inch telescope was the maximum size they could hope for.

A twenty-inch telescope is a professional-sized instrument, but it is by no means a large instrument when compared to other professional observing stations. However, the fact of greatest significance is that because of the modest size of the instrument, the two men set out to design a telescope that was as adaptable as possible to any conceivable use. The compromise they arrived at is appropriate to the discipline of astronomy, a science that has progressed by means of the interaction between the ideal theory and the actual, observed fact, because the telescope that has resulted from their creative approach to the constraints put upon them is a highly flexible, precise instrument.

Optical Design

Ultimately the telescope will have three optical configurations, each with distinct advantages. Optical design must facilitate two functions of the telescope. The light must be collected, and then it must be focused at a point where the astronomer can deal with it. The twenty-inch primary mirror collects the light for all three configurations. It

catches the light waves from a star, for example, in much the same way that we try to collect more sound waves by cupping our hand behind our ear. The light must then be brought to a location where the astronomer can look at the image of the star, photograph it, analyse it spectrographically, and so forth. The term "focus" originally came from Latin and meant the hearth or burning place; thus focus is where the light is concentrated. However, to bring the light to this point of concentration requires a certain amount of manipulation; this is the purpose of the lenses and secondary mirrors which are shown in the diagrams.

The main problems in achieving a good focus derive from the fact that light in nature does not always travel in the same tidy fashion as is depicted in diagrams. For example, as well as entering the telescope in a straight line that is perpendicular to the primary mirror, rays of light may also enter at an angle so that they can strike the mirror and reflect from it a variety of points over its whole surface. Consequently light that enters at one angle and reflects from the mirror at one point will have a slightly different point of focus than light which enters at another angle and is reflected from another point on the mirror. However, by having the appropriately shaped mirrors and lenses the light can be made to reflect and refract in such a way as to compensate for discrepancies, and a good point of focus can be achieved.

Reflector-Corrector prime focus camera. In effect, the prime focus configuration turns the telescope into a camera. The use of photography in observation was a major step forward for the simple reason that objects too faint to be seen by the eye, given a long enough exposure, would appear on a photographic plate. This particular system was first developed by a man named Baker in the 1940s, and it allows a special kind of photography. With the Baker system, the telescope will be able to take pictures with a field of approximately eight to ten times the diameter of the moon as we see it in the sky. In a simple telescope, only light that enters the telescope parallel to the axis (in a line perpendicular to the centre of a mirror) would form a clear, focused photograph, while images at a distance from the centre blur because the light does not strike the plate at its point of focus. The aspheric corrector, by refracting the light as it enters the tube, ensures that most of the light will strike the plate in focus. With this system the sky can be effectively mapped and large numbers of stars can be scanned to discover objects of particular interest.

***f*/8 Focus.** By replacing the Baker system with another tube containing a convex secondary mirror the focal ratio is changed from *f*/3.5 to *f*/8. This configuration is designed, once again, for photography.

The photographs from the *f*/8 will be limited to about one tenth of those from the Baker system. The reason that the loss in the area of focus is acceptable is that there is a corresponding increase in the size of the image produced. In short, there is a greater degree of magnification with the *f*/8 and the possibility of recording fainter objects.

The *f*/8 configuration can also be used at the Nasmyth focus (a folded Cassegrain focus as shown in figure c) for photometry, spectroscopy, or visual observing. The Nasmyth focus is achieved simply by the insertion of a flat mirror to reflect the light out of the side of the tube. It is interesting to note that the *f*/8 focal ratio was chosen because it will allow the University's instrumentation to be used at the Canada-France-Hawaii telescope now under construction. The modern astronomers' instruments are often highly specialized for particular observing tasks, and consequently it is often a definite asset to be able to use a familiar instrument at more than one observatory.

***f*/18 Focus.** By substituting another secondary convex mirror, set further up a separate tube, the telescope achieves the longer focal ratio of *f*/18. This focal ratio corresponds to the telescopes at the Kitt Peak Observatory, the David Dunlap Observatory, the Mount Kobau Observatory, and even the 200-inch reflector at Mount Palomar, and consequently the University's instrumentation will be useful at these observatories. The *f*/18 is useful primarily for spectographic and photometric analysis, but it can also be used as a camera in the same way as the *f*/8 configuration. However, while the photographic images of the *f*/18 will be larger than those produced by the *f*/8, the *f*/18 will not be used for the same deep-sky photography. The reason for this is that as the focal ratio increases, the intensity of light on the photographic plate decreases — in effect it is the same amount of light spread over a larger area. Consequently, to produce an image of sufficient clarity takes too long an exposure. However, the exposure time for this configuration is still sufficiently short for objects that have a high degree of brightness, and so the large image which the *f*/18 produces will make it excellent for lunar and planetary photography.

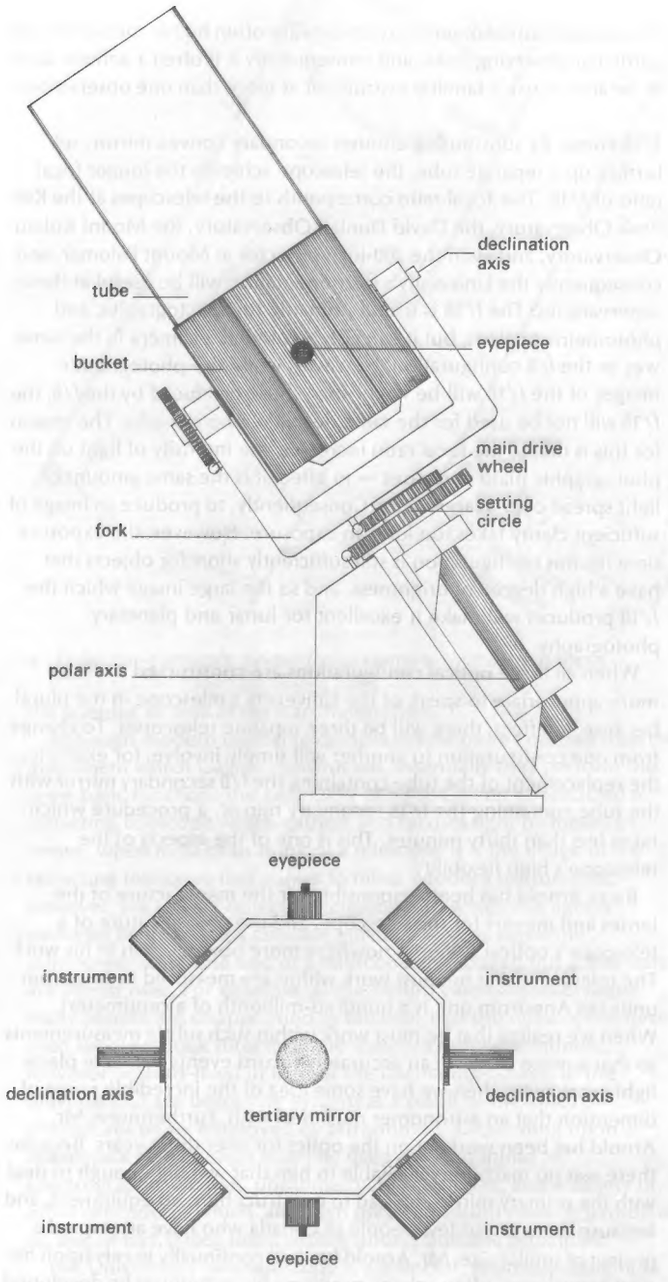
When all three optical configurations are constructed it will be more appropriate to speak of the University's telescope in the plural because, in effect, there will be three separate telescopes. To change from one configuration to another will simply involve, for example, the replacement of the tube containing the *f*/8 secondary mirror with the tube containing the *f*/18 secondary mirror, a procedure which takes less than thirty minutes. This is one of the aspects of the telescope's high flexibility.

Barry Arnold has been responsible for the manufacture of the lenses and mirrors for the telescope, and the special nature of a telescope's optical system is nowhere more obvious than in his work. The tolerances that he must work within are measured in Ångstrom units (an Ångstrom unit is a hundred-millionth of a centimeter). When we realize that he must work within such subtle measurements so that a piece of glass can accurately record events that take place light years away, then we have some idea of the incredible range of dimension that an astronomer must deal with. Furthermore, Mr. Arnold has been working on the optics for over three years. Because there was no machinery available to him that was big enough to deal with the primary mirror, he had to construct his own equipment, and because there are so few people in Canada who have attempted a project of similar size, Mr. Arnold has had continually to rely upon his own experience, often solving problems by techniques he developed himself. In short, the technology, here as in all other aspects of the telescope, does whir and click in a very precise fashion, but only because a great deal of skill, patience, and enthusiasm have gone into its construction.

Mechanical Design

In most telescopes the tube consists of the entire mechanical design from the primary mirror to the secondary mirror. The University's telescope, however, is separated into two parts: the tube and the bucket. The three tubes house the different optical configurations, and they can be interchanged in less than thirty minutes.

The bucket also has a feature which contributes greatly to the instrument's versatility. As the diagram indicates, there are eight plates on the bucket. The declination axis is attached to two of the



Side-view of bucket and tube and end-on view of bucket.

plates, and on two more of the plates eyepieces are mounted. On the remaining four plates instruments can be permanently fixed. The tertiary mirror in the centre of the bucket can be rotated in seconds to any of these points, and the result is a very great observational potential.

The purpose of the mechanical design of a telescope is simply to make the best use of the optical system. For example all the advantages of photographic observation are negated if the instrument cannot track the star (move to compensate for the Earth's motion) in a very precise fashion. The telescope is driven electrically, and the power supplies and electronic controls were designed and assembled by John Woolley of the Astrophysics Laboratory. Three different rates of motion in two different directions about the polar axis are available, as well as two rates of motion about the declination axis. These motions are controlled by push-buttons on a hand-held paddle, and they permit rapid setting of the telescope on stars as well as precise tracking over a long period of time.

Besides the hand-paddle control, there is another aspect of the telescope that has been designed for the observer's convenience. The eyepiece for observation remains about five feet from the floor and near the centre of the observatory dome no matter where the telescope is pointing. As a result the observer does not have to climb on ladders or assume awkward positions to make observations. Before we picture the astronomer in complete comfort, however, we should remember that the observatory cannot be heated because of the thermal turbulence the temperature difference would produce in the air. Similar to the heat waves over a hot road in the summer, this turbulence would have an obviously negative effect on the observations.

Bearing in mind the range of temperature experienced in Alberta we can appreciate some of the difficulties faced in the construction of the mount and the accessories. The mechanical construction was done in the Physics machine shop under the direction of Nick Riebeek. Mr. Riebeek was also responsible for the final design of the mechanical parts. The telescope had to be very precise and consequently, very rigid, but at the same time it had to cope with the expansion and contraction resulting from temperature change. To achieve the proper combination of flexibility and rigidity, Mr. Riebeek spring-loaded the components wherever possible and, when he was finished, the parts which might malfunction at low temperatures were tested in the Cold Laboratory at temperatures ranging down to sixty degrees below zero.

As impressive as these aspects of construction seem to the layman, Mr. Riebeek claims that with good personnel and good facilities, they did not constitute the main difficulty of construction. Instead, he pointed to the problem of initially visualizing what Professors Hube and Winzer required. In the early stages of design he examined as many telescopes as possible and travelled to Toronto to discuss the project with people who had experience with research telescopes. The fact remained, however, that because of the innovations on the University's telescope he was often obliged, like Barry Arnold, to rely upon his own skills and experience. In any event, he was successful in manufacturing the largest mount ever attempted at a university facility in Canada, and a measure of his success is that he has since been approached for advice by at least one other university considering a similar project.

The final result of the enthusiasm, skill, and patience of all those who have worked on the telescope is best appreciated by imagining the range of observations that could take place on a long Alberta winter's night. The evening might begin with the use of the photometer and the tube containing the *f*/18. secondary mirror. One of the eyepieces on the bucket would serve to align the telescope on a star, and then switching the tertiary mirror to the photometer the observations could begin. In principle, a photometer is much like the light meter on a camera. It translates light into electrical impulses. The intensity of the light is signified by the number of the impulses, thus the brightness of the star can be measured. A simple application of the photometer is to employ it in conjunction with filters that take out certain parts of the spectrum, and then compare, for example, the intensity of the red light and blue light emitted by the star. With this procedure the temperature of the star can be gauged.

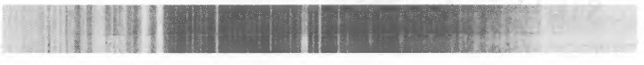
To discover the temperature of a star might not seem impressive,

but we must remember that with the exception of our Sun, the nearest star to earth is Alpha Centauri, and the light from this star takes over four years to reach us. To discover anything about the nature of an object that lies at such a distance from us is impressive, and temperature is only one characteristic of the star that can be discovered.

If we realize that astronomy is a science which deals with a Universe that stretches out farther than any of us can see, then we are well on the way to appreciating the advantages of the University's telescope. Each observation by itself does not provide a great deal of information, but when various observations are made, a comprehensive picture of the stars begins to emerge. Thus, returning to the theoretical night of observation, it might be the case that a spectrographic analysis of the star could usefully be made in close conjunction with the photometric observation. In a matter of seconds the tertiary mirror could be turned to the focus on which the spectrograph is mounted.

Spectroscopy is based upon the fact that elements will emit and absorb distinctive wavelengths of energy when they reach a certain state of agitation. The most apparent use of the spectrograph is to determine the kinds of elements of which the star is composed — if the helium line appears on the star's spectra, then helium is present. Because of the enormous distance between the scientist and his source of data, the procedures for interpreting the spectra are very complex, but the information can be substantial, and it becomes even fuller when combined with other observations. For example, if two stars have the same temperature and the same spectra, but one is much brighter than the other, then an implication could be that one of the stars is greater in size. This is a basic example of how the option of making photometric and spectrographic observations in close conjunction could be advantageous.

Even when it is not important that two kinds of observations be made close together, the telescope's flexibility is a distinct advantage. The astronomer and his telescope are earth-bound, and the mundane fact of weather must always be a consideration. The amount of moisture in the air, for example, can be a determining factor in a successful observation. Thus, if the telescope is being used for photometric observations and the night becomes unsuitable for photometry, then it would be a simple matter to switch to the spectrograph. Alternatively, the tertiary mirror could be removed and replaced by the Cassegrain camera for photography. To move through a similar range of observations with most other telescopes would either be impossible because the flexibility is simply not present, or impractical because of the time needed to unbolt one instrument from the telescope and bolt on another.



The telescope should be in operation early in 1978. Initially it will have only the *f*/8 and *f*/18 configurations, and when observations begin the available auxilliary instrumentation will be a photometer and a camera that can be used at the Nasmyth focus. Other instrumentation that will probably be acquired over the next few years are camera systems for the Cassegrain focus of both the *f*/8 and *f*/18 configurations, a spectrograph, a more sophisticated photometer, an image tube (a light amplification device that increases photographic capabilities), and an infrared detector which will allow the telescope to be used to collect the longer wavelength regions of the spectrum. In short, the University is developing a fully modern observing station at Devon. The telescope is not large, but because of the care that has been taken in its design and construction, it will facilitate a wide range of the modern observational techniques available to the astronomer today.

A question remains about the final result of the enthusiasm and energy that have been invested in the telescope. The answer to that question is relatively simple. With the possible exception of a comet, supernova, or some totally unexpected phenomenon, there will be no spectacular discoveries made at the Devon Observatory. Like any other science, astronomy does not often provide the spectacular and fully complete revelation. Instead, the range of observations made possible by the new telescope will facilitate the careful, step-by-step refinement of current theories in the same way that Galileo was able to refine Copernican theory or Hubble affirm Friedman's insight.

This slow process does not in any way imply that the concerns of the astronomer are not exciting. The exact opposite is true. Discoveries of the past fifteen years have yet to be fully comprehended: pulsars, quasars, black holes, the death of stars, and the suggestion that within the process of stellar formation are the necessary materials for the formation of life, are some of the many issues that need extensive study. Modern astronomy is giving new meaning to the old cliché that the stars are the limit because the real nature of that limit is now being discovered. However, no matter how extraordinary the stars turn out to be, the telescope will continue in its function of ensuring that we see them as they really are and with "a certainty that is due the use of our sense."

As important as the telescope is to the study of astronomy, it is still only part of the science. It is the responsibility of the astronomers, in this case Douglas Hube, Jack Winzer, and others, to make a proper use of the instrument. Considering that the telescope's effectiveness depends on the way in which they will use it, they might seem conspicuous by their absence in a discussion of the telescope. Such is not the case, however, because in a very real way the telescope speaks for them. They are not, of course, the white-coated individuals spoken of in the introduction. A lab-coat would be very impractical for looking at the stars on a cold night. But because they took such a large part in the design and construction of the instrument, and because the design and construction demanded a creative, innovative approach to very real constraints, the telescope becomes an eloquent argument for the kind of astronomy which takes place at this University.

They will be engaged in a number of studies, but perhaps the most fascinating to the layman is the mapping of the structure of the galaxy. Our galaxy is thought to be spiral shaped, in effect, shaped like a giant pinwheel. Our solar system is nearer to the edge than the centre, and the outer arms can be seen overhead from Edmonton in the winter sky. Edmonton, therefore, is probably one of the best places from which to ascertain whether or not there are further arms of the galaxy beyond the limit of which we are presently aware.

In other words astronomy has taken the Earth from the centre of the heavenly spheres and placed it in a solar system which is a fractional part of one of the arms of our galaxy, which is, in turn, simply one of many galaxies. It is a paradoxical fact of astronomy, and probably of most worthwhile knowledge, that as our means of comprehension has increased, the amount to be comprehended has also increased. The stars still remain above it all because as the telescopes have become bigger and better in an attempt to bring the stars closer, our awareness of their infinite number and distance has increased. We can, however, take comfort in the fact that we are beginning to see them more clearly.

Archaeology in Italy

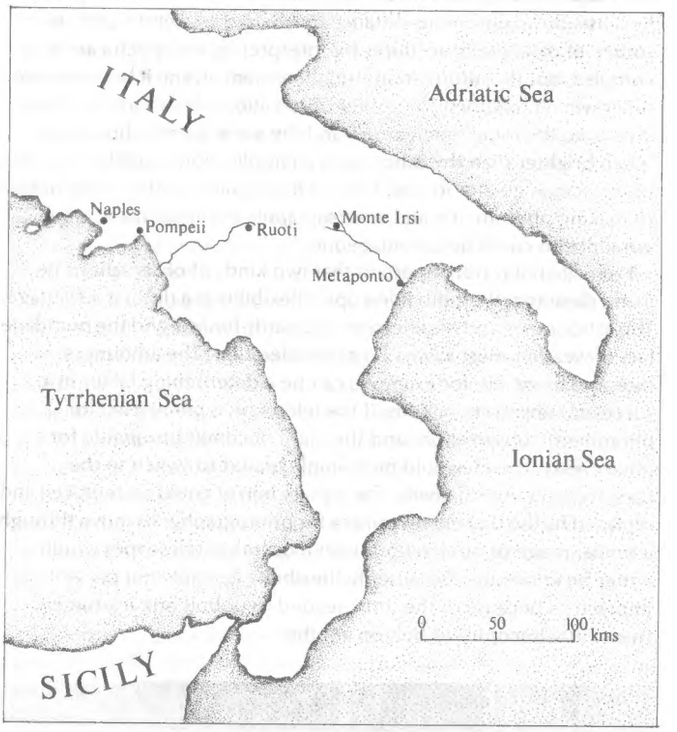
An interdisciplinary investigation at San Giovanni di Ruoti, Basilicata

by C.J. Simpson, New Trail staff

From early May to the end of June 1977, a team of archaeologists and scientists from the University of Alberta was engaged in the archaeological investigation of a hill-top settlement in southern Italy. The hill-top site, San Giovanni di Ruoti in the municipality of Ruoti, Basilicata, had been recognized for some time as a place likely to have been occupied by successive inhabitants of southern Italy, from at least the third century before Christ if not earlier. Also, San Giovanni lies in an area of southern Italy never extensively populated and always, it seems, subject to a peasant economy. Thus, as an example of the sort of rural economy prevalent in southern Italy during the Hellenistic, Roman Republican, and Roman Imperial periods, San Giovanni di Ruoti appeared likely to offer a great deal of useful information.

The team from the University of Alberta, under the direction of Alastair Small and Robert Buck of the Department of Classics, was invited to undertake exploration of this potentially valuable site by the Superintendent of Antiquities for the province of Basilicata, Dr. D. Adamesteanu, a renowned Italian archaeologist. Dr. Small was most eager to accept this invitation, for he had already played an important part in the investigation of another rural settlement in southern Italy, at Monte Irsi in the province of Apulia.

During the two seasons of excavation conducted in 1971 and 1972 at Monte Irsi, significant evidence came to light concerning the type of agriculture adopted by inhabitants of the area from the third century before Christ to the early second century of our era. The evidence, farm buildings interpreted as stalls for draught animals, loom weights, and faunal remains, seemed to contradict the widely held opinion that massive depopulation in the second century before Christ as a result of the Hannibalic Wars led to a significant transformation of the rural economy of the area. In fact, little evidence was found to support the belief that arable farming decreased during and shortly after this period and that other forms of agriculture, grazing, and the rearing of sheep for wool, became more dominant. These findings are of great significance in the development of an understanding of the rural economy of Hellenistic and Roman occupants of southern Italy and are, potentially, of major importance in the shaping of the history of the Italian peninsula during these periods.



As a result of the evidence gained at Monte Irsi, then, Dr. Small and his colleague Dr. Buck were very much interested in testing their new-found data by examining in detail another similar site elsewhere in the interior of southern Italy. Dr. Adamesteanu's invitation offered them just the opportunity they had hoped for. Thus, an application was made for funding to the Canada Council, a governmental agency that had supported the Canadian endeavors at Monte Irsi and that was very much aware of the significance of the discoveries made in 1971 and 1972. The Canada Council readily agreed to the request and, by a very generous grant, supported an exploratory expedition to San Giovanni di Ruoti in the summer of 1977.

Now, archaeological investigation of a site anywhere in the world is undertaken to answer one basic question: how did our ancestors live? A mass of evidence must be compiled to attempt to answer that simple question. Investigators, therefore, can no longer be concerned with the larger material remains of a past society, with buildings and artifacts. They must also conscientiously gather together the most minute pieces of evidence and even be aware of details concerning the site which are not overtly relevant to the nature of the site or its function. The days of the well-intentioned but largely ignorant amateur, like Heinrich Schliemann, the excavator of Hissarlik (Troy) and Mycenae, are long since gone.

Moreover, the best-known technique of archaeological investigation, controlled excavation, is by its very nature destructive. Once a site has been thoroughly excavated, there should, in theory, be nothing left of that site. Thus, very many preparations have to be made in advance of excavation: documentary sources and historical details related to the site and its supposed function must be closely analysed, as far as possible a rigorous survey of the site and its environs must be made, and even the beliefs and opinions of the local inhabitants of the area must be solicited and carefully weighed. Also, before a large scale excavation is embarked upon, a smaller excavation should be undertaken to test and refine the methods of gaining data from the site. The aim of these methods should be to gather the greatest amount of information concerning the activities of the former occupants by the most economical means available.

Consideration must be given to many different factors which will govern the outcome of the excavation. For example, the excavator must take into account the topography of the surrounding region, the availability of suitable labor, the soil conditions prevailing at the site today as well as those likely to have been dominant in previous centuries, and, equally important, the necessary cooperation of the present occupant of the site and of the national, regional, and local governments. Thus, before even a single clod was turned at San Giovanni di Ruoti, Dr. Small and Dr. Buck had spent many months in detailed planning and in considering the sorts of problems likely to be encountered, the nature of the evidence to be solicited, and the recruitment of a local labor force and of skilled personnel.

The team that went over to Italy last summer was comprised largely of members from the staff and students of the University of Alberta. Since it was hoped that the excavation would yield further details concerning the manner of agriculture and rural economy adopted by the Hellenistic and Roman inhabitants of southern Italy, a prime requirement was the recruitment of individuals skilled in the collection and analysis of faunal and floral remains, bones, and seeds. Gentry Steele, Ross McPhee, and Steve Monckton of the Department of Anthropology fulfilled these requirements and readily joined the team. For further analysis of the plant remains, the services of Lorenzo Costantini of the Istituto di Botanica, the University of Rome, were enlisted.

Of course, a very major part of the expedition was the actual excavation of the site. The requirements here were for individuals trained in the careful techniques of archaeological excavation, that is, the uncovering of successive layers of soil which give evidence for the occupation of the site at different times. While a local labor force recruited from the municipality of Ruoti did the actual digging, site supervisors were needed to control the excavation of the several areas of San Giovanni that were to be opened up, to record the progress of the excavation and the finds, and to make sure as much evidence as possible had been collected. In this capacity, the services of Helen Buck and Jeremy Rossiter of the University of Alberta, Claude Roberto of the University of Ottawa, and Jeff Levitt of the University of Calgary proved invaluable. Other people were also needed to make up the team, for recording and cataloguing artifacts — especially the pottery remains, whose analysis still constitutes the single most important mechanism for dating the periods of occupation of most ancient sites in Italy and the Mediterranean world. Two people were recruited for this task, Joann Freed of the University of Alberta Department of Classics and Christine Boulding of the University of British Columbia.

Also, as in any archaeological excavation, a photographic record was absolutely essential. This was provided by Willie Rauschning from the Photo Services Division of Technical Services at this University.

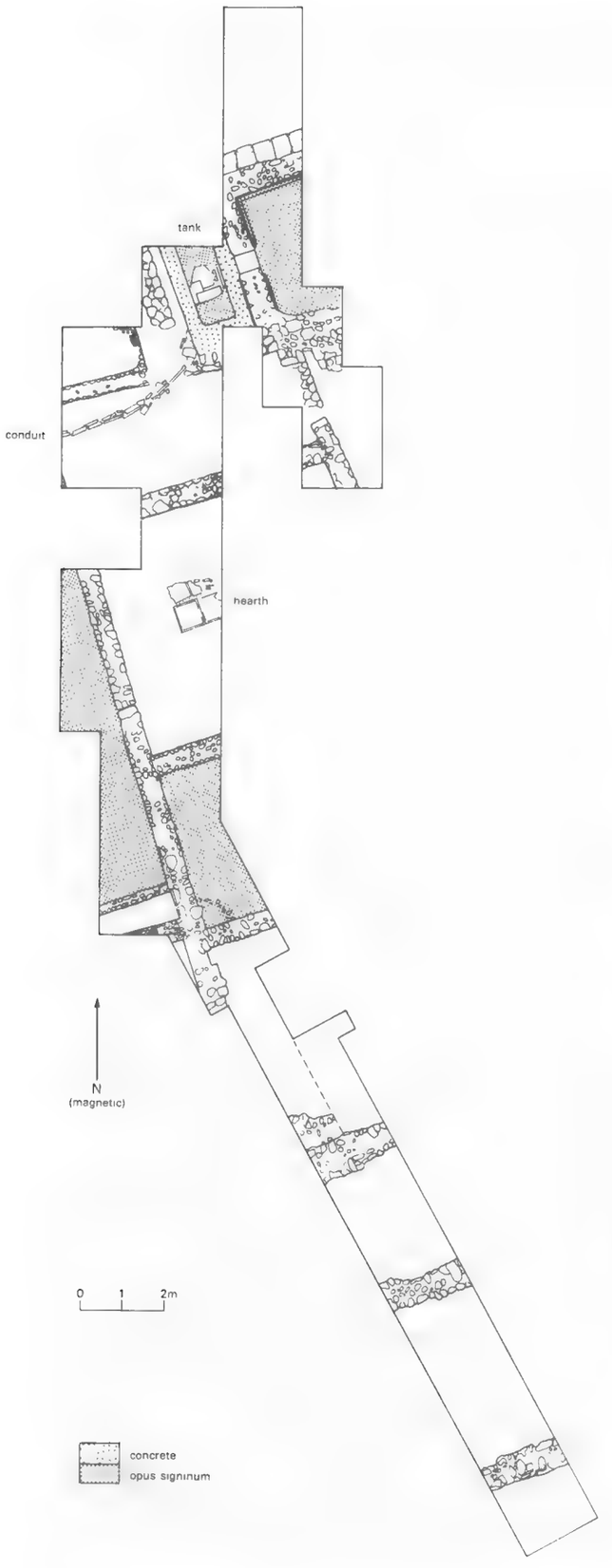
The Mayor of Ruoti and his compatriots lent very valuable assistance to the Canadian team. In fact, the municipality of Ruoti provided the team with free accommodation and also agreed to backfill the areas excavated at its own expense.

Throughout the excavation, the Canadian team enjoyed very happy relations with the Italian authorities and the local community. In this regard, the team acted as unofficial ambassadors of Canadian culture to southern Italy. Members of the team attempted, as far as possible, to keep the local community informed on all aspects of the excavation, participating in a public conference and giving two radio broadcasts in Italian about their work. In the last two weeks of the "dig" the team was joined by a group of young Italian amateur archaeologists, the "Gruppo Archeologico Lucano," who were very eager to learn more about the Canadians' methods of excavation and recording. Under the supervision of Dr. Small and his colleagues, these young archaeologists actively took part in the excavation of San Giovanni di Ruoti, contributing greatly to the success of this phase of the investigation.

The excavation at San Giovanni, unlike many other excavations of sites in the Mediterranean world, aimed from the start to recover evidence which could lead to a total picture of the manner in which the former occupants of the site had lived. The excavators, therefore, did not focus their attention so much on "finding things," like fragments of monumental sculpture, isolated objets d'art, and valuable coins — though such "things" are always welcome, if not as evidence, then at least as stimuli to the enthusiasm of the labor force.

At the beginning of the excavation, a careful survey was made of the site for evidence of structures and possible areas of occupation beneath the surface of the hill top. Dr. Small and his associates accomplished this in two stages, by "field walking" — a technique in which the surface scatter of occupational debris is recorded and assessed according to areas of relative density — and by a magnetometer survey. In this second stage of the survey, a well-tried but highly sophisticated instrument, the proton magnetometer, was used to detect magnetic anomalies beneath the surface of the soil. Such anomalies in the local magnetic field are caused by a variety of reasons. For example, top soil is relatively more magnetic than undisturbed soil. Thus, an ancient ditch or foundation trench, which generally contains more top soil than adjacent areas, yields a higher than average reading. On the other hand, however, a stone foundation or wall is less magnetic and therefore gives a lower than average reading on the proton magnetometer. These measurements may be plotted on a grid plan of the site.

The magnetometer survey at San Giovanni was carried out by technicians from the Fondazione Lerici Prospezioni Archeologiche, a private organization based in Italy which employs sophisticated techniques for the isolation of sites of archaeological or historical interest. The survey, supervised by R.E. Linington of the Fondazione



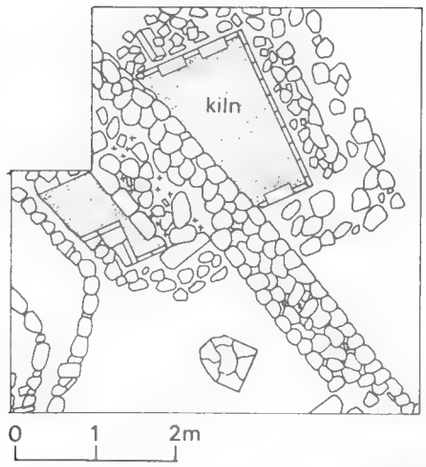
Lerici, was of great assistance to the Canadian team, for it pointed out where occupational areas and walls might be located. Also, by a "dipole variation," the excavators' attention was drawn to a particularly interesting part of the site. A "dipole variation" is characteristic of the sub-surface existence of kilns or furnaces. When that part of the site which yielded this variation was excavated, Dr. Small's team, in fact, uncovered a tile kiln. In the northern part of the site, the survey and subsequent excavation also led to the discovery of similarly interesting structures: two interconnecting tanks. The purpose of these bath-like structures has not yet been ascertained, but they are clearly related to the agricultural function of the settlement.

In all, some eight thousand measurements were taken in the magnetometer survey at metre intervals, thus covering an area of the hill top of approximately eight thousand square metres. This survey enabled the Canadian team to concentrate on especially interesting parts of the site and avoid areas that were relatively sterile.

At the beginning of the "dig" three trenches were opened according to the indications provided by the magnetometer survey. A

Above. The western area of the excavation in 1977. Left. Site plan.

fourth trench was laid out at a later stage in the excavation for the Italian archaeologists of the Gruppo Archeologico Lucano. In all four areas, the excavators encountered the remains of walls and foundations, sometimes quite massive. These structures were very interesting for they all possessed the same orientation and thus appear to have originated in a single plan. By careful excavation, however, it was possible to ascertain that the structures were not all



Above. Plan of tile kiln and the tile kiln under excavation.

Steve Monckton operating the machine for water separation of seeds.

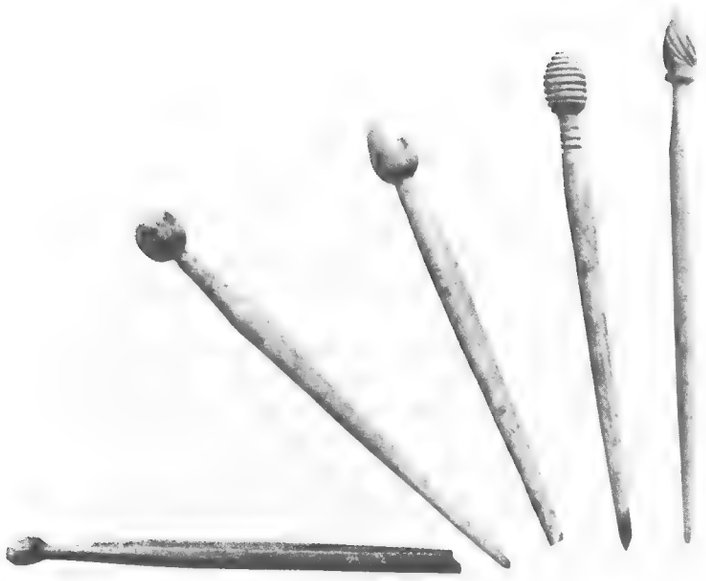
erected at the same time. In fact, the phases of building proved to be quite complex and, until the dating evidence — especially the pottery — is analysed and the results tested in further excavation, the chronology and functions of the structures will remain unclear. The site at San Giovanni di Ruoti is well-stratified, that is, the layers of soil, which give evidence of different phases of occupation, are relatively easily discernible. Nevertheless, these strata and their interrelationships were also found to be very complicated and some further work at the site needs to be done before the different phases of occupation are clarified and put into a coherent chronological scheme.

Such difficulties, however, are not exceptional. Rather, they are the norm in any archaeological investigation of a complex site. In fact, the very complexity of the site at San Giovanni di Ruoti yields evidence for its significance to the surrounding region. Without making any premature judgments about the nature of the settlement at San Giovanni and, just as important, without forcing the data obtained into a preconceived pattern, Dr. Small and his colleagues believe that they can make several tentative conclusions concerning the site. Occupation of San Giovanni appears to have been more or less continuous from the first century of our era to at least the sixth century and possibly even later. Also, San Giovanni di Ruoti probably represents the kind of rural settlement referred to in the ancient sources as a *villa rustica*, that is, a rural farm that served the needs of the local inhabitants of the region and which, on occasion, produced a surplus of agricultural goods that could be distributed even further afield.

Inasmuch as San Giovanni was patently an agricultural settlement, Dr. Small and his associates, from the very start of the "dig," set about carefully collecting animal and plant remains. In this regard, the excavation is highly innovative, for it is an unfortunate fact that few classical archaeologists working in the Mediterranean world have yet come to terms with the collection and examination of such data. Bones and seeds can yield much evidence concerning the nature and function of a rural site and, with careful analysis, can give significant insights into the workings of a rural economy. A major function of the first season's exploratory work at San Giovanni, therefore, was the refinement of techniques used to gather such evidence. Also, these techniques had to be tested and compared to ensure that their use did not lead to the collection of a biased sample.

Several recovery techniques were employed during the excavation. The first such technique, "trench recovery," is the method usually encountered in the excavation of classical Greek and Roman sites. This involves reliance upon the visual acuity of the individuals actually excavating an area, in the hope that an unbiased sample of bone or pottery is recovered. There is, however, in this method the very great chance that recovery of bony material will be biased in favor of larger domesticated species and older animals. As a check against this bias, Dr. Steele and Dr. McPhee also employed the technique of "dry screening," that is, the sifting of measured samples of soil from distinct strata through mesh screens of differing magnitude. This second method of recovering bones added to the number of fragments collected. The same was true also of the third technique employed, "wet screening," a process similar in nature to the second method. Neither of these last two processes, however, significantly altered the proportion of bones recovered from different species.

The excavations at San Giovanni di Ruoti collected a large amount of bone during the first season's "dig," by weight approximately seventy-five kilograms. Much of the bone was severely fragmented and thus hard to identify. Each of the areas excavated, however, yielded identifiable bones in much the same proportions, those of pigs being more frequent than the second largest sample, of sheep



Ivory hairpins discovered at San Giovanni di Ruoti in 1977. They may be dated to the fourth century after Christ and measure between four and five centimeters.

and goats.

This discovery at San Giovanni is of some significance, for it has been argued that a similar dominance of pigs at Monte Irsi gave evidence of a sedentary form of rural economy in southern Italy during Roman Imperial times and that the inhabitants of the region relied less heavily on a form of agriculture which involved the seasonal movement of flocks or herds from winter to summer pastures. Such an interpretation of the evidence, however, is only valid if it is assumed that both pigs and caprines (sheep and goats) were raised for gain. Here the researches of Dr. Steele and his colleagues took a novel twist. Much of the bone sample recovered at San Giovanni di Ruoti was highly fragmented and it was necessary to find an explanation for this phenomenon. Accordingly, Dr. Steele initiated a survey which included the collection of modern bone from the streets and rubbish dumps of the neighboring town of Ruoti. This aspect of the survey was carried out to the great amusement of the local Italian community, which saw Canadian archaeologists — quite sane individuals under normal circumstances, and reasonably well fed — grovelling about in the dirt and laughing with delight at the discovery of the remains of a Sunday roast.

For all the amusement, however, a striking similarity was found to exist between the modern remains and the fragments of ancient bone. On both samples there are marks of butchery and chewing, thus suggesting to the excavators that the bone sample from the ancient site probably represented table refuse that had been given to dogs. Thus, not only should the likely agricultural practises of the ancient occupants of the site be taken into consideration but also their gastronomic preferences. While these results will seem hardly surprising to the layman, they may well necessitate a major re-working of several hypotheses governing the present state of knowledge of Roman farming practises in many parts of the Italian peninsula and elsewhere in the Mediterranean world.

Another major aspect of the "dig" at San Giovanni in 1977 was the collection of plant remains. The collection of such material is vital to an understanding of the agrarian economy of Roman farms. The collection was undertaken by Steve Monckton and the analysis, which has not yet been completed, by Lorenzo Costantini. Mr. Monckton employed in his task a technique known as "water separation." Measured samples of soil from the occupation layers apparent in each excavated area were submerged in a vat of water in which were placed layers of mesh of varying sizes. The soil samples were agitated in the vat to allow much of their vegetable content including carbonized seeds to float to the surface and be skimmed off by the operator. In this way it was possible for Mr. Monckton to isolate a sample of plant remains suitable for statistical analysis. Already, from a preliminary analysis of the data collected in 1977, Dr. Costantini has been able to point to the existence at San Giovanni di Ruoti during the earlier Roman periods of emmer *(triticum dicoccum)*, durum wheat *(triticum durum)*, bread wheat *(triticum aestivum)*, six-row barley *(hordeum vulgaris)*, and *vitis vinifera* — a vine cultivated for the production of wine.

The first season's excavation at San Giovanni di Ruoti, therefore, produced a welter of valuable information concerning the farming practises adopted by the local inhabitants of the site during Roman Imperial times, that is, from the first century after Christ to the sixth century. Much of this information, however, is still being analysed. For example, Mrs. Freed, a PhD student in the Department of Classics, returned to Italy in the fall of 1977 to undertake a closer examination of the pottery recovered in the excavation. (The Italian government very wisely protects the country's antiquities and only on rare occasions does it allow material recovered in archaeological investigations to be examined abroad.) A considerable amount of pottery was recovered at San Giovanni di Ruoti which Dr. Small plans to examine with the aid of data processing techniques, such as computerized cluster analysis. In such an examination, careful consideration must be given to the individual pottery types, their characteristic fabrics, decorations, shapes, possible interrelationships, functions, and the relative frequency with which they occur in the occupation layers at San Giovanni.

The work conducted at San Giovanni di Ruoti in the summer of 1977, although necessarily exploratory under the terms of the Canada Council grant, has received the acclaim of several scholars of international reputation. The excavation carried out by Dr. Small and his colleagues marks a major step forward in the manner in which archaeological data are obtained in southern Italy and a significant advance in the present state of knowledge of Roman agriculture and rural economy. Of course, much work remains to be done at the site to clarify the information gained from the first season's exploratory investigation. The Italian government, Dr. Small, and his colleagues are pleased that funds have been made available for at least one more season's work at this very important settlement in southern Italy.

After this article was written, the author's attention was drawn to the negotiations currently under way with the Italian government to bring to Alberta a major exhibition of archaeological material from southern Italy. The Italian government has given permission for the exhibition to be transported to Edmonton. This gives some indication of the importance placed by that government on the excavation of San Giovanni di Ruoti by the University of Alberta team.

The exhibition itself is only the second major collection of its type to leave Italy from the time of the Second World War. It is of the highest significance and of very great interest to archaeologists and laymen alike. It is hoped that this exhibition will also include artifacts recovered from the University of Alberta's excavations in southern Italy.

Applications have been made for funding to several public agencies, but it is hoped that private individuals and institutions will also contribute to the success of the exhibition. For further information about this exciting prospect, please contact Dr. Small or Dr. Buck, the Department of Classics, Humanities Centre, University of Alberta, Edmonton, Alberta, T6G 2E5. Telephone 432-3228.

CKUA

Fifty years of growth for the university's own station

by Jean Kirkman

On 21 November 1927, in a basement room of the Power Plant Building on the University of Alberta campus, a dream came true for H.P. Brown and A.E. Ottewell. After many years of hard work convincing, coercing, and begging for the chance to reach Albertans through the University's own radio station — CKUA was on the air.

The first broadcast over CKUA was barely noticed by Alberta and world press. The beginnings of this first educational radio station in Canada were of minor importance in a world dominated by the return of vaudeville to the New Empire, the assumption of party leadership by R.B. Bennett of Calgary for the Conservative Party of Canada, and the announcement that a woman would be running for Edmonton city council. Department of Extension staff member cum radio announcer, H.P. Brown, informed listeners that they were listening to CKUA, station of the University of Alberta, and the station was on the air. Even at this point, CKUA never would have managed to make its first broadcast were it not for the help of its friends. CKUA was unable to broadcast on its own frequency of 580, so W.W. Grant took his own station, CFCN in Calgary, off the air so that CKUA could be heard on that frequency for its maiden broadcast.

That first winter, CKUA was on the air for a total of only eight hours per week, Mondays and Thursdays. Lectures by University professors were alternated with symphony performances and a special "Women's Hour" with Miss Mable Patrick, head of the Household Science and Economics Department. "Taking the University to the people" became a reality instead of just a catch-phrase of hopes to form Canada's first educational radio station.

One of the biggest fights that faced the existence of CKUA was convincing the Department of Extension management of the worth of this new medium in education. Furnishing a studio with pieces "borrowed" from various department offices was a lot easier than acquiring the money necessary to build a proper studio. Even as CKUA went on air that first evening, everyone involved knew that a studio held together by "chewing gum and prayers" wouldn't last indefinitely, and a permanent studio would require more funds than those available in 1927.

In his book, *We Have With Us Tonight,* the Department of Extension's E.A. Corbett describes his first impression of CKUA and the people connected with it: "I, as Assistant Director of the Department, was sceptical and slightly contemptuous of the whole

A.E. Ottewell, one of the founding members of CKUA, broadcasts from the remote speaking booth in the basement of the old Power Plant Building in the late 1920s.

undertaking. . . . I could see no use for such a treacherous medium. But the children of darkness are wiser in their generation than the children of light — I, of course, being one of the children of light — so Brown and Ottewell persisted in their enthusiasm and continued to experiment with a program of recorded music, lectures on agricultural problems, short one-act plays, etc. It was not until 1928 when Ottewell became Registrar of the University and I took over as Director of the Department that H.P. Brown was able to enlist my support for the expenditure of funds from our overworked budget to build a studio, install new equipment, and generally take an interest in what he rightly believed to be one of the most important educational instruments of all times."

With this change of heart, CKUA was assured of adequate facilities, at least for a few years, and the people behind CKUA were free to concentrate on offering listeners the sort of programming not heard anywhere else. The original eight hours per week were gradually increased with additional programming including one-act plays, science programs, and French language lessons. By the late 1930s, on-air time had reached forty hours per week. The studio, by now on the second floor of the Department of Extension's building, was divided into a concert studio large enough to hold a twenty-piece orchestra plus a grand piano, a speaker's studio, a control room, and an extra room with a loudspeaker where waiting artists might listen to the program on the air.

There were also direct lines to Convocation Hall, the University Hospital, and the rink so that remote broadcasts could go on the air. Organ recitals were broadcast as they occurred in various city churches. Religious plays on Sunday afternoons and a series of music-appreciation programs by Vernon Barford helped to attract listeners. As well, through the direct lines, CKUA could broadcast remote a play-by-play description of University basketball and hockey games — broadcasts that proved immensely popular.

In the 1930s, CKUA was featuring numerous popular programs and items which at the time were not even considered by commercial radio stations. The CKUA Players attracted national attention with their series of one-act radio plays that eventually were also carried on the CBC network. The Foothills Radio Network grew from an informal liaison between stations in Red Deer, Calgary, Lethbridge, and CKUA in Edmonton, and in 1929 when CN Telegraphs organized the first national network, CKUA became its Edmonton outlet.

By 1940, steadily deteriorating transmitting equipment threatened to put CKUA off the air, and the Board of Governors was "naturally most reluctant to even contemplate the closing of CKUA because of its historical position as a pioneer in educational broadcasting in Canada, and because of the increasingly important part which radio is playing in the work of the University." The provincial government was persuaded to finance the necessary costly repairs under a new agreement of management. A new committee of management would be represented jointly by the University's Board of Governors and by the provincial government, and was the body to which the administration of CKUA was responsible. By 1944, the new equipment had on-air operation to a total of sixty-three hours per week, the maximum on-air time reached during the eighteen years that CKUA was entirely a University station.

As the years passed, CKUA continued to lead the field of broadcasting in innovative and educational programming. It became the first station to broadcast an Alcoholics Anonymous program. It was the first to develop specially a program for sourdoughs in the far north, with a mixture of weather, fur prices, and other news of interest to trappers and miners. CKUA was the first station to cover the legislative sessions on a regular "beat," and was also the first to broadcast commentary from the press gallery during house sessions. Another innovative program, the play-by-play broadcast of football

Above. *From its first broadcast in 1927, the major piece of furniture in the CKUA studio was the grand piano. Over the years, this piano was the instrument for hundreds of performers and still stands today in the main studio. Burlap, however, is no longer used to drape the walls and ceiling for accoustical control.* **Below.** *CKUA broadcast weekly "Hut Concerts" from the Red Cross Hut in the University Hospital, with performers like Leon Baker's Hawaiian Orchestra proving popular.*

Above. *The University Radio Orchestra of 1926-27 delighted the first audiences with their performances. Through the next fifty years, numerous other orchestras succeeded the original group and today's emphasis is still on classical and jazz music.*
Below. *Radio plays were among the first regular programs on CKUA. In 1928-29, one of the casts included (left to right) H.P. Brown, Bill Townend, Mrs. McCrae, David Jones, Mrs. McQuaig, Herbert Turner, and Mrs. Cockburn.*

games, has since been adopted by practically every commercial station in Canada.

In spite of all the innovation, financial problems again began to plague CKUA's operation, and in 1945, Alberta Government Telephones agreed to assume responsibility for the operating costs incurred by CKUA. This agreement was subject to the condition that the University could still have as much time on CKUA as it wanted. After CKUA operational costs were assumed by AGT, the station was free to continue year-round as a full-time, non-commercial station. This operation included programs like the "Music Hour," which was carried over CKUA five times a week every week from 1927 to 1956. The contribution of University students and faculty continued to be invaluable.

CKUA continued to operate full-time, and in 1955 the studios were moved from the campus to the station's present home in the Alberta Block on Jasper Avenue. Even then the University involvement didn't end, since many programs produced by the various University radio societies were broadcast over CKUA as well, even as recently as 1970. Numerous students who first got their taste of radio with the University radio societies graduated to become part-time and full-time CKUA staff members.

A change in government licensing regulations left the future of CKUA in grave doubt in the early 1970s. Strictly speaking, CKUA was operated for many years in contravention of federal regulations which stipulated that only the licensee could own and operate a station and that no licenses could be issued to provincial crown agencies. Because of this irregularity, the Canadian Radio-Television Telecommunications Commission ruled that CKUA's license would lapse on 31 March 1974, unless its operation could be legitimized. The establishment in 1973 of the Alberta Educational Communications Corporation (ACCESS Alberta) offered a solution to the problem.

If the government would approve the transfer of CKUA's license to ACCESS, the station could continue to concentrate on the educational aspects of broadcasting. At the time of this proposal, the University Senate voiced strong concern that the provincial government should ensure "the continued independence and integrity of CKUA." The University's Academic Staff Association questioned whether a radio station was a suitable medium for educational programming, and whether the existing widely based programming would be maintained. This concern on the part of University of Alberta faculty indicated the proprietary interest still shown for the radio station that had to fight to be born, and also indicated to CKUA management that the station had hundreds of friends in the educational community.

In 1974, the license transfer was approved, and ACCESS Radio CKUA launched upon a new era of expansion and growth. From the original 500 watts of AM power, CKUA celebrated its Golden Anniversary with 10,000 watts of AM power, and a network of 100,000 watt FM transmitters. The fifth major transmitter was scheduled to go on the air in Peace River at 6:00 p.m. on 21 November 1977 — exactly fifty years after the first CKUA broadcast was heard. A sixth major FM transmitter at Grand Prairie also began operation before the end of 1977, making the original "Voice of the University" within reach of eighty-five percent of the entire Alberta population. A seventh transmitter at Red Deer eventually will complete the over-all coverage, and smaller "step-out" transmitters will fill the "holes" left in total provincial coverage.

On its Fiftieth Anniversary, CKUA has much to be proud of — and many of the proudest people are those who helped in the early days when the station was part of the University of Alberta's Department of Extension.

Jean Kirkman (BA'76) is a history graduate who now works as a writer in Promotions and Publicity for ACCESS Alberta.

The Emergence of Women in Medicine

From an address to Convocation on 28 May 1977
by Leone MacGregor Hellstedt

Throughout history, women have always been especially interested in the health of their families, particularly of their babies and children. As a consequence, there have always been women assistants to medical fathers, husbands, brothers, and sons; but for many centuries, due to young marriages and repeated pregnancies, most women have had little or no time for real education of any type. At delivery they were in the hands of friends or midwives, and due to the universal ignorance of the causes of puerperal fever, only the very fittest survived. In addition, in such countries as India and parts of Russia, the prevailing religion prevented millions of women from being attended even by male doctors.

Nevertheless, there actually were women on the medical faculty of the first university of Europe, at Salerno in Italy, already in the ninth century. The medical schools of Italy have always been open to women, but it has taken over a thousand years before any considerable number of girls became educationally qualified for enrolment.

In the New World, men and even some women learned to practise medicine solely by apprenticeship, until the University of Pennsylvania Medical School was opened in 1765, for men only. Eighty-five years later, in 1850, the first chartered medical school for women in the world was also founded in Philadelphia, largely due to the rise of the feminist movement and the humanitarian ideals and efforts of Quaker men and women.

Women students from civilized countries all over the world flocked to this women's medical school. Many of the graduates were then sent to Asia and Africa by the missionary societies, to open hospitals and medical schools for women in those countries. The native women who graduated from such schools were then able to get their specialist training in America and Europe. These women were without exception particularly interested in the care of women and children, and those with great organizational ability reached high positions, especially in India, in obstetrics, gynaecology, paediatrics, and public health.

There have always been women in medicine in Japan, except in the late 1800s when a law was passed prohibiting women from practising but not from studying medicine. In 1902, however, a woman doctor with the help of her medical husband founded the Tokyo Women's Medical College, which was finally accepted by the government in 1920. We now have 10,000 women doctors in Japan.

Leone MacGregor Hellstedt, photograph taken on the day of her graduation in Medicine, at the University of Alberta, 1925.

In Russia, women very early were allowed to study medicine, either abroad in Zurich or Berlin, or at home in St. Petersburg at the Women's Academy of Medicine, which already a century ago had 180 students, most of them of noble birth. Alexander Borodin, the famous musical genius, nobleman, and professor of physiology, played a leading role in the founding of this first Russian medical school for

women. The women students were instructed in the same building and by the same teachers as the men but at different hours. After having graduated seven hundred women, the government closed the school for ten years. When it reopened in 1897, 188 students at once enroled, and ever since then women have been allowed to study medicine in Russia. By 1925, when Alberta graduated its first medical class, there were already 20,000 women doctors in the Soviet Union.

The first Canadian woman licensed to practise medicine was Emily Stowe. Like many of her contemporaries, she was of Quaker origin. First a teacher, then the wife of a dentist and mother of three children, she engaged a relative to take care of her family and, with her husband's whole-hearted support, departed for New York where she took her degree in 1867. Twelve years later, her daughter Augusta was the first women to receive a medical degree from a Canadian university.

In Sweden, Uppsala University is celebrating its five hundredth anniversary. For several hundred years, eighty percent of the students came from the homes of the clergy, the rest from the nobility and the peasants. Until 1850, all lectures were in Latin, and the professors themselves wrote all the theses, which the students needed only to defend to become doctors. In academic processions, it was the custom for students from the nobility to precede the professors. In 1870, a law was passed allowing women to study medicine, but *not* law or theology. It was believed that medical studies might help a woman in her role as mother and wife, and that the medical profession did not require the use of pure reason, as did law and theology. It was not until 1888 (260 years after the first man graduated) that the first Swedish woman, Carolina Widerström, graduated in medicine in Sweden. Before this, however, two Swedish women did take medical degrees abroad, one in London and one in Philadelphia, and both of them spent their lives practising in the United States. Nowadays, the eight million inhabitants of Sweden have one doctor for each five hundred persons. This makes 16,000 Swedish physicians, of whom every fifth one is a woman. If the present trend continues, every second doctor will be a woman in fifty years.

The next important step in the history of medical women was that taken in New York in 1919, when distinguished foreign and American women who had served their countries abroad in World War I founded the Medical Women's International Association. This was the very first international medical association in the world. It now has 13,000 members in forty countries and holds biannual congresses in different parts of the world. At the latest meeting last year in Tokyo, 1,200 women doctors from twenty-eight nations participated.

About fifteen years ago, at the Association's congress in the Philippines in Manila, I began to wonder what had finally made it possible for Australasian, Asian, African, European, and American women to break down the barriers which had kept them so long out of medical schools. What factors in the outside world, and especially what motives within themselves, had been strong enough to enable this change to take place? That they emerged in so many countries around 1850 was of course partially a logical outcome of the social, economic, and educational revolution of the previous half-century.

However, we have no records of the motives of the pioneer medical women themselves. What moved these young women to action? What inspired them to struggle to get their education in the face of almost insurmountable difficulties?

As Past President of the Medical Women's International Association and as Chairman of the Project Committee, I decided to initiate, by means of autobiographies, a study of the motives and emergence of the pioneer women in our forty affiliated countries. As all of those born before 1878 are deceased, I selected the group with birthdates 1879 to 1914. The authors were chosen in their own countries and were requested to stress their family background and their remembered motives since early childhood to enter the medical profession.

I now have ninety-five autobiographies from pioneers from twenty-eight of our member countries. Although none of these women are professional writers, their stories make fascinating reading. They present us with keys to the lives of women in all of these nations during a specific epoch. Already as children, these physicians-to-be were ambitious and courageous. Almost all of them came into close contact with serious illness or death in their early childhood and had been deeply impressed. Most of them had already chosen their future profession by puberty. With few exceptions, both parents had encouraged them. All of the husbands were extremely supportive. These women have enjoyed their work and have made splendid careers, chiefly in the fields which deal with the health of women and children which was their aim from the beginning. Now in their later years, they have made a unique effort in presenting us with precious records of their own lives, as they recall them.

Their overwhelming response to this project is remarkable. At first, my plan was to assemble the material as an MWIA contribution to International Women's Year and then to deposit it in one of the three American medical schools which have departments doing research on women in medicine, namely, Harvard, the Medical College of Pennsylvania, and the University of California. In the meantime, however, the Medical Women's International Association has decided to publish the manuscripts in book form to present at our congress in Berlin in August 1978. Our book will contain the only collection of autobiographies of any profession, male or female, from international sources and from a specific period of history. We hope that these records of some of the joys, sorrows, and satisfactions that these ninety-five pioneer women have encountered on their medical pathway will enrich the outlook of our readers, especially in regard to the possibilities of women in this profession.

Leone MacGregor Hellstedt, the only woman in the University of Alberta's first graduating class in medicine, received her MD in 1925. She went on to post-graduate studies in pathology at the University of Minnesota, where she received an MSc degree in 1927 and a PhD degree in 1929. She received fellowships for post-doctoral training in pathology at Harvard and at the University of Hamburg.

In 1932 she married Swedish economist Folke Hellstedt. From that time she lived in Sweden, where she raised two children, a son and daughter.

Following the Second World War, Dr. MacGregor Hellstedt took special training in Zurich and Stockholm in psychoanalytic medicine and therapy. She actively practised that form of medicine from then until her death this summer.

Dr. MacGregor Hellstedt received an honorary Doctor of Science degree at Spring Convocation on 28 May 1977.

The collection of autobiographies of medical women will be published under the auspices of the Medical Women's International Association.

campus reporter

Clothing for the Physically Handicapped

Another Project Assisted by the Alma Mater Fund

In 1973 Ann Kernaleguen, Professor of Home Economics in the Clothing and Textiles Division, began a three-phased applied research project on "Clothing for the Physically Handicapped."

The program began with the collection of information from physically handicapped people themselves and from those who care for them — what problems had they encountered with clothing and grooming, and what solutions had they devised that might be useful to other people. Then Dr. Kernaleguen turned to developing possible solutions to these problems and to evaluating both her own proposed solutions and the solutions passed on to her by handicapped people. Finally, she sought ways to communicate this information to the disabled, their families, and the public in general.

Dr. Kernaleguen found that clothing had more than a functional importance for handicapped individuals. Clothing for the disabled should be attractive as well as comfortable and convenient to wear; it should be fashionable to meet their needs to look like others, to say something more about their personalities and less about their handicap. Clothing, in fact, can prove to be a valuable rehabilitative tool.

Dr. Kernaleguen believes that social attitudes towards the physically handicapped are changing. Young people seem to be particularly interested in her project, and she suggests that basic clothing for the handicapped should be included in the home economics and health curricula in schools. She feels that there should be a basic clearing house for information specifically useful to the handicapped. Possibly, members of the Home Economics Faculty should help and should stir the interest of community groups like the Red Cross in such projects as developing clothing for physically disabled people, since commercial endeavors have shown little success in this area.

Several basic problems surfaced: What are the facets of comfort in clothing? Is comfort both physical and psychological in nature? Does skin sensitivity change with age? What disabling conditions affect skin sensitivity? If manufactured clothing for the handicapped is going to be on the market, clothing researchers should work on the development of specifications. What, for example, are easily handled buttonholes? What kind of closures are best for people with restricted finger movements?

In the past, clothing specialists have developed sets of pattern alterations for the near-standard figure, for individuals who are a little plumper, a little shorter, a little taller than the norm. Similar sets of pattern alterations should be developed for more specific problem situations: for the chair-bound person, for people with radical scoliosis, and so forth.

Dr. Kernaleguen has found that there is a fundamental lack of information on clothing for the handicapped. Clothing specialists have never assumed roles on rehabilitation teams, nor have they had communication with volunteer and professional associations. She feels that ways of communicating to the handicapped must be researched; such information should include styles that are suitable for concealing various types of deformity, styles that lend themselves to alterations, ideas for ways to adapt clothing, and new and different fastenings.

During the three years that she has been engaged in this project, Dr. Kernaleguen has made a substantial contribution toward communicating with professional and public groups, such as the Red Cross, nurses' and occupational therapists' associations, and home economics associations, with addresses to conventions and meetings, articles published in various journals and magazines, television appearances, and a summer workshop with participants from rehabilitation medicine, occupational therapy, nursing, home economics, the veterans' hospital, geriatric centres, the Red Cross, and the Society for Dependent Handicapped.

Clothing Design for the Handicapped, a supremely practical book by Dr. Kernaleguen, is being published in the summer of 1978 by the University of Alberta Press. It will contain photographs and diagrams of the many clothing modifications and special designs she has devised and has gleaned from handicapped people. Undoubtedly it will prove an excellent store of helpful information for both the disabled and for those who care for them.

The Alma Mater Fund gave Dr. Kernaleguen $2,000 in 1974 to start the project, and another $1,500 from the 1976 campaign to help finance the publication of her book.

Left. *Dr. Aylmer Ryan, former provost and assistant to the President, was the 20th recipient of the Alumni Golden Jubilee Award presented at the fall Convocation in November. Mr. A.M. Arbeau, President of the Alumni Association (right), is seen making the presentation. Dr. Ryan has retired from the University after thirty-one years of service.*

Right. *Jean B. Forest, Senate representative on the Board of Governors, has been elected by the Senate of the University of Alberta to serve as Chancellor of this University for a five-year term commencing in July 1978 on the expiry of the term of office of the present Chancellor, R.N. Dalby.*

Conference on Language Acquisition

Stephen Carey of Faculté Saint-Jean received a grant of $30,000 from the Secretary of State, Language Program Branch, to organize and host a conference and workshop on second-language acquisition and related issues. The conference had three specific objectives: to initiate and develop a rational dialogue between researchers and practitioners on the subject of

bilingual education; to inform educators of significant research in the field; and to promote the communication of such research results as well as their sources.

Medical Research Council Immunoregulation Group Established
A research group has been established at the University to gain a thorough understanding of the human body's immune system and thereby relate that knowledge to a variety of diseases. The Immunoregulation Group was formalized on 29 August 1977 when Jean de Margerie, acting President of the Medical Research Council of Canada, and H.E. Gunning, President of the University, signed an agreement providing terms of reference for the Group's activities. The Medical Research Council provides $1.5 million for the support of research over the next three years; $450,000 of this amount was used in the first year of operation.

Symposium on Native Religious Traditions
A symposium on native religious traditions was conducted at the University in September. About one hundred native elders and scholars attended the symposium sponsored by the Department of Religious Studies. Its goal was to bring together the two groups so that a meaningful exchange of opinion could take place.

The symposium was organized to coincide with the centenary commemoration of Treaty No. 7, a treaty which recognized native culture as a vital and continuing element of Canadian culture. Participants examined native religion and culture as well as mythology and ritual. An exhibition of contemporary native art and a ceremonial pow wow was also organized together with the Native Students' Association.

Ukrainian Studies Conference The Quebec Minister of Cultural Development, the Honorable Camille Laurin, and Canada's former commissioner of offical languages, Keith Spicer, both took part in a conference held in September titled "Ukrainian Canadians, multiculturalism, and separatism: an assessment." It was organized to help the Ukrainian Canadian community evaluate its position with respect to separatism, multiculturalism, and federalism at this time in Canada's history.

University Priorities Committee The Board of Governors approved the establishment of a Priorities Committee to "develop and recommend policies for determining priorities in the University's academic and support functions," and to determine "growth patterns" and shifts of enrolments among faculties. The Committee will also consider a financial forecast model both for operating and capital expenditures and a study of the feasibility of shifting non-monetary resources within the University.

Lee Foundation Grant The University has been awarded a $30,000 grant from the Clifford E. Lee Foundation for the purchase of a collection of prints titled "Eskimo Games and Play." This grant from the Lee Foundation, established in 1970 by the Edmonton entrepreneur Clifford E. Lee, will also cover the cost of design and printing of a catalogue of the collection.

Barker Fairley Honored Barker Fairley, a professor who taught at the University of Alberta from 1910 until 1915, was honored by the National Library of Canada during May. An exhibition titled "Barker Fairley: scholar-poet-painter" was held in the foyer of its auditorium on the occasion of his ninetieth birthday. A bronze bust of Professor Fairley, created by Almuth Lutkenhaus and donated by her to the National Library, was dedicated during the opening ceremony.

Heritage Canada Award for Pembina Hall
The restoration of Pembina Hall has received a Regional Prize Award for 1977 from Heritage Canada, the national organization for promoting the conservation of historic structures. The Award was announced at the annual meeting of Heritage Canada in Ottawa on 30 September 1977. It includes a cash prize of $2,000, which will be used to purchase an appropriate work of art for the University Collection.

Pembina Hall was completely renovated in 1975, sixty years after it was first opened. Formerly a women's residence, now it is a co-educational residence for senior students. Pembina, like the other two old residences, was slated for demolition several years ago but was saved through the concern expressed by members of the University community, and through one notable, year-long protest by women residents in Pembina Hall.

Pembina Hall competed against conservation projects in Manitoba, Saskatchewan, Alberta, British Columbia, and the Northwest Territories. A second restoration project in Western Canada was also recognized with an award, the restoration of Hodson Manor erected in Vancouver in 1893.

Invitation to apply

Emil Skarin Memorial Fund

Applications are invited to the Emil Skarin Memorial Fund Committee of the University Senate for a 1978 project or projects worthy of financial support amounting to $5,000.00 from the Fund.

Projects must be of some value to the public as well as to the University of Alberta, be consistent with the general aims and purposes of this University, and not normally be funded by it. Preference will be given to projects with an emphasis on the humanities and the arts, but there are no restrictions on the nature of eligible projects.

Project proposals should include objectives, schedule, budget, procedures for organization and evaluation. Application forms are available on request.

Chairman
Emil Skarin
Memorial Fund Committee
The Senate
University of Alberta
Edmonton, Alberta
T6G 2G8

books

Project Yesteryear R.S. Patterson, Associate Dean of the Faculty of Education, was recently invited to head a team of educational consultants to provide historical verification for a new television series, *A History of Schooling.*

The television series will be produced by ACCESS Alberta in cooperation with the University's Faculty of Education. There will be sixteen programs of fifteen minutes each which will explore the socio-economic factors responsible for shaping the form of education in Western Canada. The programs will make full use of the techniques of narration and dramatization. A very important feature of the series will also be the presentation of historical photographs which have been collected largely by Dr. Patterson and his associates.

To aid Dr. Patterson's research into the forty year period between 1905 and 1945, the Department of Advanced Education and Manpower allocated grants to Dr. Patterson and his colleagues of some $34,000. These grants enabled Dr. Patterson to devote a year travelling around Canada gathering photographs and invaluable resource material from many different quarters.

The broadcasts were initiated in January of this year and are narrated by Leslie Nielsen, the well known actor who, as a former Albertan, received much of his school education in this province.

Crossing
Frontiers

Canadian and American Western Literature Conference

A conference bringing together Canadian and American literary scholars, historians, and writers to discuss the literature of the two Wests in relation to their historical cultural backgrounds.

Set in the Canadian Rockies
at the Banff Centre, Banff, Alberta
April 12-15, 1978

featured speakers to include:
John Cawelti
Carl Berger
Richard Etulain
Sandra Djaw
Leslie Fiedler
Henry Kreisel
Howard Lamar
Robert Kroetsch
Earl Pomeroy
Jack Hodgins
William Stafford
Dorothy Livesay
Frederick Manfred
Eli Mandel
Don D. Walker
Ken Mitchell
Wallace Stegner
W.O. Mitchell
Lewis G. Thomas
Frank Waters
W.H. New
Max Westbrook
Andrew Suknaski
Keith Wilson
Rosemary Sullivan
Delbert Wylder
Rudy Wiebe

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The Bird's Nest Fungi, *by Harold Brodie, Professor Emeritus of Botany. Toronto: University of Toronto Press, 1975. Hard cover, $25.*

Let it be admitted that most specialized scientific works are virtually unreadable.

Professor Brodie's book distinguishes itself by being not only readable but captivating, even for amateur naturalists who have scarcely heard of Bird's Nest Fungi. We have it on the good authority of Silver Keeping that the book is as scientifically excellent as it is readable; in fact, Dr. Brodie received the Lawson Award of the Canadian Botanical Association for this book and for his contribution to teaching. Dr. Keeping, medical mycologist at the Provincial Laboratory from 1933 until 1954 and Research Associate in Bacteriology, Botany, and Genetics at the University from 1954 until 1964, studied with Harold Brodie under A.H.R. Buller at the University of Manitoba.

Birds's Nest Fungi, or Fairy Goblets, Elfin Caps, or Corn Bells (Nidulariaceae) are small vase-shaped fungi filled with tiny seed-like bodies that contain spores, looking for all the world like miniature birds' nests filled with eggs. In fact, the little cups are splash guns that, when triggered by a captive raindrop, scatter the reproductive spores around them.

Bird's Nest Fungi tend to grow at the edge of vegetation in the forest, in meadows, even in the garden. They have been known to botanists since the beginning of the seventeenth century. Dr. Brodie traces the study of these fungi since then and discusses all aspects of their growth, structure, and life-cycle, whether in the laboratory or in nature, from observations and unpublished experiments. Certain of the Bird's Nest Fungi now hold particular interest because it has been found that they produce chemical compounds with anti-microbial properties, unknown before the early 1970s.

Dr. Brodie was Head of the Department of Botany at the University of Alberta from 1957 until 1966 and continued to teach here until 1971. He is now retired and living in Victoria. A popular work on fungus by Dr. Brodie has been accepted for publication by the University of Toronto Press and should appear in 1978.

More books from the University of Alberta Press

About a year ago the University's General Faculties Council voted that the University "actively and publicly" support the University of Alberta Press to obtain funding to assist in the publication of Canadian materials for teaching and research. Last fall, the Alberta Department of Advanced Education and Manpower announced a $50,000 grant to the Press to publish Canadian, particularly Western Canadian, materials.

Most of the books published by the Press are funded by special grants from such agencies as Canada Council and various government departments. For the past couple of years the Press has been able, in a very modest way, to subsidize new books from the revenues produced by books it has already published. The grant from the Department of Advanced Education and Manpower will allow the Press a somewhat broader selection from the large number of manuscripts that come to it each year.

How does the Press choose which books it will publish? The first criterion is quality, for a manuscript must be of a very high quality indeed to be considered by the Press. Second, it should be of value to Canada, particularly to Western Canada: this, according to L.E.S. Gutteridge, Director of the Press, may mean anything from a scholarly or scientific work written by a western Canadian author to a book about some matter of importance to Western Canada by an author who has never set foot west of the Atlantic, let alone Toronto. The third criterion is that the book be original, that it has not previously been published or that it is unavailable in English.

However, "a publisher does not wait for the manuscript to come to him," Mr. Gutteridge advises. "He commissions books." Such books must meet long-felt needs and have a wide appeal; naturally, such books also sell well. One of the first books to be commissioned by the University of Alberta Press is a history of Western Canada by Lewis G. Thomas.

Mr. Gutteridge commented that the Press would not flatly declare that it would never print certain types of books: "Although it is highly unlikely that we should ever print books of poetry, fiction, or children's stories, I should hope that we would have the wit to recognize a Tolkien if he appeared."

Scholarly publishing, as seen from the perspective of the Director of the University of Alberta Press, is a lively, exciting, and creative activity. A brief glimpse at several books in various stages of publication by the Press shows the breadth of its offerings and what it means by "Canadian content."

Western Canadian Dictionary and Phrase-book: Picturesque Language of the Cowboy and the Bronco-buster, *edited by John Sandilands, with an introduction by John Orrell, Professor of English. $5, cloth.*

This little dictionary, a second, ribald edition of what its author claimed to be the first dictionary ever printed in Canada, was published in 1913 and has been virtually unobtainable ever since. It includes such gems as *dudelette* ("a mentally and physically stunted male, of any age, to whom dress — and frequently overdress — is the Alpha and Omega of Life") and *eleemosynary* ("a fine-sounding word that has a great future before it . . .") through *mossback* (". . . 'a rolling stone gathers no moss': the *mossback* is the other fellow").

Truelove Lowland, Devon Island, Canada: A High Arctic Ecosystem, *edited by L.C. Bliss, Professor of Botany. $20, cloth.*

This large volume summarizes five years of interdisciplinary research on an Arctic area unusually rich in its flora and fauna. This is the first study that has been undertaken of the ecosystem in the northern islands, and the information it contains will be useful in relation to land-management plans for other Arctic islands as well.

Pottery in Alberta, *by Marylou Antonelli. $12.50, cloth.*

This large, fully-illustrated book is the first history of an industry in Alberta. It traces the roots of Alberta's reputation for artistic ceramics back to the simple, practical jugs, bowls, pots, and jars produced by such potteries as "Medalta" in the south of the province.

Menander to Marivaux: The History of a Comic Structure, *by E.J.H. Greene, Professor of Romance Languages. $10, soft cover.*

In what Professor Greene calls the "F" structure in comedies, traceable from Menander in the fourth century B.C. to the second half of the French eighteenth century, "Les amours spontanées des Jeunes, contrariées par les Vieux, sont favorisées par les Valets." At the end of the play, "the Young, abetted by the Servants, have always vanquished the Old and have won the day for true love, plus the funds with which to support it."

A Descriptive Catalogue of the Bension Collection of Sephardic Manuscripts and Texts, *by Saul I. Aranov. Estimated cost, $15.*

The Bension Collection, purchased for the University of Alberta Library by the Harry R. Cohen Foundation, contains rare manuscripts that span five hundred years of Sephardic Jewish history and is the first Hebrew manuscript collection to be found in Canada.

Unnamed Country: The Struggle for a Canadian Prairie Fiction, *by Dick Harrison, Associate Professor of English.*

This is a pioneer attempt to place Canadian prairie fiction in its own cultural and historical context. A second book by Professor Harrison has been accepted for publication by the Press, dealing with fictional literatures about the Mounted Police at various stages of western history.

Other books at various stages of production include *Developments in Dual System Estimation of Population Size and Growth,* edited by Karol Krotki, Professor of Sociology and an internationally noted expert in this field; a useful book on *Clothing Designs for the Handicapped,* by Ann Kernaleguen, Professor of Home Economics; a laboratory manual for Food Science, as a trial project; with the Canadian Institute for Ukrainian Studies, a Ukrainian-Canadian historiography; *Issues in Developmental Sociology,* edited by Nico Stehr, Associate Professor of Sociology; a translation of an important German work on environmental restoration that should be of considerable practical interest to Alberta; a translation of the French book that is perhaps the major work in the world on the Métis; and a history of Boeotia by R.J. Buck, Professor of Classics.

All University of Alberta Press books are available through the University Bookstore.

the alumni

'22
Eminent dairy scientist and Professor Emeritus, **H.R. Thornton,** *BSc(Ag),* was named recently to the Olds College Alumni Hall of Fame.

'26
On completion of thirty-one years in office, **Clarence Campbell,** *LLB,* president of the National Hockey League, has stepped down. A note affirms that he expects "to continue my association with the League indefinitely."

'27
Eardley S. Allin, *BSc,* is semi-retired and working part-time with **D.L. Tittemore,** *MD'51,* in Banff, occasionally at the Chateau Lake Louise.

R.E. Folinsbee, BSc '38

Walter Harris, BSc '38

Aylmer A. Ryan, BA '39

'29
George Stanley, *BA,* Sackville, New Brunswick, joined a very distinguished club earlier in the year when appointed to the Order of Canada. In May he received an Honorary Doctor of Laws degree from Dalhousie University.

'32
R.G. Dunlop, *MSc,* continues to enjoy his retirement after twenty-six years with the Defence Research Board.

'33
Ruby (McCaskill) Allen, *BSc(Nu),* has retired after twenty-eight years association with the "Large Clinic" on Vancouver Island.

'36
We look forward to meeting **Allen Conroy,** *MD,* when he visits Edmonton this summer as official representative of the Northern California Square Dancer's Association. Dr. Conroy has practised anaesthesiology near San Francisco for the past twenty-five years, prior to that in Chicago.

'37
E.L. Green, *BSc(Ag),* is currently running Snowbird Rental Centre Ltd. and "doing farm work when called." Gulf Canada has announced the appointment of **G.A. Connell,** *BSc(Eng),*as manager (planning services) in the strategic planning section, exploration and production department, Calgary.

'38
John C. Charyk, *BSc,* long-time principal, Hanna High School, has a book about to be published titled *Those Bittersweet Schooldays.* Two distinguished University professors, **R.E. Folinsbee,** *BSc,* and **Walter Harris,** *BSc,* were honored recently by the Royal Society of Canada. Dr. Harris, chairman of the Department of Chemistry, was elected to Fellowship. Dr. Folinsbee, Professor of Geology, was elected President of the Society.

'39
Aylmer A. Ryan, *BA,* was recently awarded an honorary life membership in the Canadian Association of Colleges and Universities Students' Services, in recognition of his generous contribution in this area throughout Canada.

'40
Eliot Corday, *MD,* clinical professor of medicine at the University of California and co-chairman of the cardiac care committee at the Cedars-Sinai Medical Center, Los Angeles, was recently awarded the "Commander of the Order of the Liberator San Martin," highest decoration of the Government of Argentina. The Award, usually reserved for a head of state or an ambassador, was presented by the President of Argentina while Dr. Corday was on a lecture tour of South America.

'41
George M. Tuttle, *BD,* Principal, St. Stephen's College, is the new Moderator of the United Church of Canada. **R.M. Lauer,** *BSc(Eng),* has been appointed chief concentration engineer with Cominco, Trail.

'42
Ross P. Alger, *BCom,* is the mayor of Calgary.

'43
Esso Chemical Limited recently announced the election of **Richard H. Hislop,** *BSc(Eng),* a director of the company. In recognition of his outstanding contribution in the field of chemistry, **Raymond Lemieux,** *BSc,* will become the Chemical Society of London's fourth recipient of the Haworth Award and Medal, to be placed this spring. The Award, established in 1969, is bestowed for advances in carbohydrate chemistry. Dr. Lemieux was named to the Order of Canada in 1969 and in 1976 was appointed for a three-year term with the National Research Council.

'44
There has been a change in the direction of the working life of **R.A. Macbeth,** *MD.* Moving over from New Brunswick, he is currently executive vice-president of the Canadian Cancer Society and executive-director of the National Cancer Institute with headquarters in Toronto.

'49
The Energy Resources Conservation Board has announced the retirement of **Douglas R. Craig,** *BSc(Eng).* **W.G. (Bill) Jewitt,** *BSc(Eng),* is Superintendent, zinc operations, at Cominco, Trail. Having been a physician for twenty-eight years and a hospital administrator for twenty-five, **Ernest C. Shortliffe,** *MD,* recognizes the importance of communication between a community's physicians and its health care institutions. This is why he is making improved communication lines a top priority since taking over as president of Medco Centers Inc., Evansville, Indiana. Medco owns or leases twenty-five nursing homes in Kentucky and Indiana. **Eleanor F. McMurtry,** *BA,* attended the Triennial Conference of the International Federation of University Women in Stirling, Scotland. A newly created position of Chief Environmental Co-ordinator with Pacific Petroleums Limited is being

George M. Tuttle, BD '41

Ross P. Alger, BCom '42

Eliot Corday, MD '40

filled by **W.D. Broughton,** *BSc(Eng).*

'50

William J. Simpson, *DDS,* is Chairman of the Department of Dental Clinical Sciences at the University. After eleven years as Vice-President, Newsprint, for Kruger Pulp and Paper Limited, **Geoffrey P. Chinn,** *BSc(Eng),* is Manager of the eastern division of the Forest Engineering Research Institute of Canada. Mr Chinn's task will be to optimize the efforts of some twenty researchers in a wide range of subject fields. At present these fields include new machines for harvesting and transportation; the maintenance of existing machines; the effect of machines upon the woodlands environment; ergonomics; and energy conservation. **A.E. Egglestone,** *BSc(Eng),* is Vice-President of Alberta Gas Chemicals Limited, Canada's largest producer of methanol with two world-scale plants at Medicine Hat.

'51

G.J. Maier, *BSc(Eng),* is Executive Vice-President and a member of the board of directors, Hudson's Bay Oil and Gas Company.

'53

After ten years on the staff of the Pastoral Institute of Calgary there is a new appointment for **R. Oakley Dyer,** *BA,* now director of the Kingston Institute of Pastoral Care and associate professor of practical theology at Queen's Theological College, Kingston, Ontario. **Dave C. McDonald,** *BA,* of the Alberta Supreme Court, is head of the Royal Commission investigating the activities of the Royal Canadian Mounted Police.

'54

Donald J. McLeod, *BSc,* is Vice-President, Central Division, Reichhold Chemicals Limited, Weston, Ontario.

'55

Arthur O. Jorgensen, *BEd,* teacher and adminstrator for the past twenty-six years, has been singularly recognized by the Alberta Teachers' Association Council of School Administration, having received the Association's distinguished Service Award as administrator of the year 1977. **D.Q. Martin,** *BSc,* is Vice-President Explorations, Amoco Canada Petroleum Company Limited. **E.W. (Gene) Ratsoy,** *BEd,* is Assistant Dean (program evaluation) with the University's Faculty of Education. His major task is to organize, install, and maintain a system for the continuing evaluation of courses and programs.

'56

Hudson's Bay Oil and Gas Company has announced the appointment of **R.F. Haskayne,** *BCom,* as Executive Vice-President and a member of its board of directors. Lakeland College, the only interprovincial institution of its kind in Canada (Alberta and Saskatchewan) has as its President, **Robert Earl Olsen,** *BEd.* Manalta Coal Limited has announced the appointment of **R.N. Sanders,** *BSc(Eng),* as president. **D.G. Quigley,** *BSc,* is senior exploitation supervisor, Pacific Petroleums Limited.

'57

The Saskatchewan Chamber of Commerce is being served by **Harvie Allen,** *LLB,* as President.

'58

Sylvia (Kuores) Scott, *BSc(HEc),* has opened a new business, "Microwave Action Centre," for consumer microwave cooking classes plus the sale of microwave ovens, microwave cookware, etc. The Federal Fisheries Department has **Gary C. Vernon,** *BA,*as director-general.

'59

G.L.W. Clark, *BSc(Eng),* is Vice-President of the Alberta Gas Ethylene Company Limited. His responsibilities will be to develop and direct the operating organization for the company's world-scale ethylene manufacturing plant near Red Deer. **John N. Nasedkin,** *DDS,* was recently awarded a fellowship by the Academy of General Dentistry at its convocation in Montreal.

'61

Darryl J. Auten, *BD,* is co-ordinator of continuing education at St. Stephen's College. A member of the Department of Educational Foundations, **H.W. Hodysh,** *BEd,* is editor of the *Alberta Journal of Educational Research.* A hydraulics engineer with Klohn Leonoff Consultants Limited, **Ernest A. Portfors,** *BSc(Eng),* is executive engineer of their hydraulics section. A partner in the Lethbridge law firm of Higa and Wood, **J. Arthur Wood,** *BSc(Pharm),* is Chairman of the Lethbridge Community College Board of Governors.

'63

George Oake, *BA,* former editor of the *Victoria Times,* is with the Ottawa Bureau of Southam News Services. **Sharon (Yurchuk) Pisesky,** *BSc(HEc),* home economics consultant with the Edmonton Separate School Board, is the co-author of a textbook in food science entitled *What's to Eat.* A research fellowship from the American Council of Learned Societies has been placed with **Neil K. Moran,** *B.Mus,* along with a visiting fellowship from the Dunbarton Oaks Center for Byzantine Studies at Harvard. **Bevis A. Ostermann,** *BSc(Eng),* is Vice-President (Engineering) with Loram International Limited.

'64

Ken G. Teare, *BSc(Eng),* is manager of farm electric services, Calgary Power Limited. The Export Development Corporation has **V.G. McKay,** *BCom,* as Vice-President (operations-Africa and Asia). **Elva Rowland,** *BA,* has been appointed supervisor of the southern region of the Alberta Human Rights Commission. With management experience from various organizations, **Doris (Houle) Lewoniuk,** *BSc,* is Executive Director of the Alberta Lung Association.

'66

Robert G. Hamilton, *BCom,* is manager of the hardwood lumber group, Forest Products Division, Koppers Company Inc., Pittsburgh. He will be responsible for all of the group's production and marketing activities. **Karen (Vollan) Patrick,** *BA,* owns two plant shops in Edmonton — Plant West. **Duncan Cameron,** *BA,* has a new book in French *The International Monetary System on the Road to Reform.* **Dennis Didow,** *BA,* is Regional Director of Mental Health Services in Red Deer.

'67

Lorne Ball, *PhD,* formerly manager of research for Syncrude Canada Limited, is Principal of East Kootenay Community College, B.C. **Paul Schnee,** *MD,* is Director and medical health officer for North Battleford Health Region No. 13. **C. Lawrence Merkley,** *BCom,* is assistant Vice-President (Investment Planning) Permanent Trust Company. **Robert G. Snead,** *PhD,* with Tenneco Inc. has been transferred as geological supervisor from the mid-continent division, Oklahoma City, to the Gulf Coast division.

'68

A $44,000. grant to do research for the University of Colorado Springs has been placed with **Peter G. Kevan,** *PhD.* The study will incorporate the relationship between alpine flowers and insects on the Mosquito range near Fairplay, Colorado, and at the summit of the 13,100 foot Pennsylvania Mountain. The Saskatchewan Wheat Pool has purchased a 320 acre farm east of Watrous for practical research purposes. The facility is headed by **Bruce Hobin,** *BSc.* **Peter M. Stanton,** *BSc(Eng),* is Assistant Manager with the Energy Resources Conservation Board. **James M. Oshiro,** *BEd,* is one of two members-at-large recently appointed to the Lethbridge Community College Board of Governors.

'69

Banister Fairclough Mining Company has **Al Zemrau,** *BCom,* as manager of finance and administration. **Robert S. Gawreluk,** *BEd,* is Bursar and Dean of Administrative Services, Okanagan College.

'70

Roland M. Mansell, *BSc(Eng),* is chief engineer with Nabors Drilling Limited. **G.J. Hwang,** *PhD(MechEng),* is chairman of power, Department of Mechanical Engineering, Tsing Hua National University, Nsinchu, Taiwan. **Wendy (Brown) Dirksen,** *BSc(Nu),* is working on her master's degree in child development at Iowa State University.

'71

Sheka Kanu, *PhD,* is Sierra Leone's ambassador to Germany in Bonn. **Hans C. Dirksen,** *MD,* is Director of the intensive care unit for new-borns at Iowa Memorial Medical Center, Des Moines. **Jan DeJong,** *PhD,* is Director of engineering for the domestic and interational activities of Lockheed Petroleum Services Ltd., Vancouver. New man on the Alberta steel front is **Stanley H. Ainsley,** *BSc(Eng).* He has been named Alberta regional manager of the Canadian Institute of Steel Construction.

'72

S.J. (Sid) Stephen, *BA,* Shilo, received one of three literary awards for 1977 granted by the Canadian Author's Association. Captain Stephen won a poetry award for his collection "Beothuck Poems" dealing with the massacre of the Boethuck Indians of Newfoundland. **Sharon Brintnell,** *RN,* is President-Elect of the Canadian Association of Occupational Therapists.

'73

Don Radstaak, *BSc,* is teaching adult basic education, East Kootenay Community College. **Kerry (Bjarnason) Patenaude,** *BSc,* is in Edmonton articling in law. **Linda Duncan,** *LLB,* is devoting a good deal of time to coordinating a book entitled *The Citizen Resource and Planning Manual* which she hopes will increase and enhance the average citizen's participation in community planning. **Douglas E. Barlund,** *BSc(Ag),* is the Canadian Imperial Bank of Commerce agricultural officer for Saskatchewan. **Helen (Martin) Madill,** *RN,* is the Alberta member on the board of the Canadian Association of Occupational Therapists and Chairman of the education council of the Association.

'74

In connection with the publication of *The King in Tudor Drama,* **Patricia S. Barry,** *PhD,* served as visiting lecturer at the Institut für Englische Sprache und Literatur, Universität Salzburg. **Corlaine Davidson,** *BSc,* is with Parks Canada operating out of Cornwall, Ontario. Her job title is interpretive planner and specialist. **John W. Elias,** *BCom,* was one of twenty-eight students placed on the Dean's Honor List when he graduated from a class of 192 last spring at the University of Western Ontario.

'75

Janet M. Mystrom, *BSc,* is enrolled in veterinary medicine, University of Saskatchewan. **R.A. Philp,** *LLB,* is solicitor with the Board of Industrial Relations in Alberta. Partners in a law office in Wetaskiwin are **Dennis Pike,** *LLB,* and **Kenneth Sockett,** *LLB.* A specialist in curriculum development and evaluation, **Andrew S. Hughes,** *PhD,* is Assistant Director of the Atlantic Institute of Education, Halifax.

'76

S.J. Humphreys, *BSc(Ag),* is attending the Western College of Veterinary Medicine, Saskatoon.

'77

Margaret Jane Laskosky, *BEd,* is with the Wetaskiwin separate school system. **Mary Ann Crichton,** *BSc(Eng),* is with Shell Canada Resources Limited, Calgary. **Merle Good,** *BSc(Ag),* is loans officer with the Agricultural Development Corporation, Red Deer. Now in Swift Current, **Gerald Braaten,** *BCom,* is with Marsh and Ginet chartered accountants. **Jeanne Besner,** *BSc(Nu),* is with the federal government as nurse in charge at Fort Chipewyan nursing station. **Gerald Pilger,** *BSc(Ag),* is district agriculturist in training, High River.

Alumni Homecoming '78

Friday, October 20

8:00 to 10:00 pm
Wine and Cheese Party
Faculty Club

Saturday, October 21

10:00 am Campus Tour
(Rutherford Galleria)
11:30 pm
Pre-Football Game Luncheon
Lister Hall
2:00 pm
Football Game
University of Alberta Golden Bears
versus the University of Calgary Dinosaurs
6:30 to 7:30 pm
Homecoming Reception
Lister Hall

Special Classes '18, '28, '38, '53, '58, '68, '73

In Memoriam

Agnes Kathleen (Wilson) Teviotdale, *BA'12,* member of the first graduating class, in Port Hope, Ontario.
Edna Catherine (Tharp) Oestreich, *BA'19, BEd'57,* in Edmonton.
James Arthur Hunter, *BSc(Ag)'21,* former mayor of Innisfree.
Helen Chalmers, *BA'23, MSc'25,* in Edmonton.
Leone (McGregor) Hellstedt, *MD'25,* first women graduate from the University's Faculty of Medicine, in Sweden.
Madge (Deane) Manning, *BSc(HEc)'27* in Calgary.
Edward G. Hollies, *MD'27,* well-known medical practitioner, in Pouce Coupe.
Thomas Lynde Cross, *LLB'28,* retired judge of the District Court of Alberta.
William H. McDonald, *BA'39,* well-known United Church minister.
Harry Weinlos, *MD'31,* distinguished Edmonton surgeon and citizen.
William E. Janzen, *DDS'31,* long-time dental practitioner in Wetaskiwin.
Herman Beecroft Rogers, *BSc(Arts)'32,* retired teacher, in Red Deer.
Charles Russell Cousineau, *MD'33,* well-known medical practitioner, in Edmonton,
William Daniel Cuts, *MD'36,* in St. Albert.
David B. Collier, *BSc(Eng)'39,* prominent Edmontonian and long-time employee of Northwestern Utilities Limited, in Edmonton.
Gordon A. Allen, *BSc(Eng)'39,* general manager of Falconbridge Nickel Mines, in a company plane crash.
C.H. (Hank) Anderson, *BA'39,* of a heart attack, in Swift Current.
Maxine W. (Bow) MacDonald, *BSc(Nu)'41,* during the early summer.
George Andrew Ennismore, *BA'42,* one of the first blind persons to graduate from the University.
W.H. McPherson, *MD'59,* radiologist at Kern Medical Center, Chicago, Illinois.
Robert H. Mewburn, *MD'61,* professor and psychiatrist, in Edmonton.
Peter Victor Coldham, *BEd'61,* in Calgary.
K. Dianne (Whitson) Moussa, *BSc(Nu)'67,* in Wetaskiwin.
Joseph L. Collins, *BEd'70,* teacher in the Edmonton Separate School system.
David Norman Shapiro, *BA'70, BEd'73,* in Edmonton.
K.W.A. Wallace, *PhD'70,* in Saskatoon.

Homecoming '77

Above. *Chancellor Ron Dalby breaking the official kick-off record established in 1968 by the Right Honourable Pierre Eliot Trudeau on the campus grid. A. Markle holds the ball.*
Below. *One of the most responsive anniversary classes at Homecoming '77 was the aggregation of Silver "Aggies" of 1952. Twenty of a class of thirty rallied for a full program of reunion events. One of these was a trip to the dairy research unit on the University campus. Seen making the rounds are (left to right, standing) Dennis Radcliff, Sundre; Bob Shopland, Edmonton; Don Bancroft, Edmonton; Kay (Sutherland) Bawtree, Kamloops; Hugh Campbell, Edmonton; Bill Bray, Regina; Bill Hurst, Cranbrook, in front.*

Homecoming Banquet and Ball '77. The reception at Lister Hall on 8 October.
Left. *Premier Peter Lougheed responding to the toast to the Silver Graduates (1952).*
Right. *(from left to right) Mrs. Percy Davies; Percy Davies, QC (Gold Class 1927); Mrs. Doris (Davies) Jones (HEc '52 Silver).*
Below. *(from left to right) Garth Fryett, QC (Law '52 Silver); Mrs. Helen Mackie; Bud Arbeau, President of Alumni Association; Mrs. Louise Arbeau; Mr. Jim Mackie (Law '52 Silver).*

Homecoming Wine and Cheese Party at the Faculty Club on 7 October 1977.
Far left. (from left to right) J.T. Jones, Professor Emeritus; Dr. Nelson Chappel (Gold Class 1927), New York.
Left. *(from left to right) Walter H. Johns, Professor Emeritus; Frank Keeping, Professor Emeritus; Silver Keeping.*

Official Re-opening of Athabasca Hall

The official re-opening ceremonies of Athabasca Hall were held 8 October 1977. **Below.** *Former Provost Aylmer A. Ryan, '39 BA, and Dr. Jean Lauber, Associate Vice-President (Academic) spearheaded arrangements for the official occasion. Professor Ryan was master of ceremonies, Dr. Lauber spoke of the co-incident exhibition of historical artifacts displayed in the building.* **Below right.** *At the moment of officially re-opening Athabasca Hall, Premier Peter Lougheed, President of the Students' Union in the Silver year (1952), symbolically unveiled the St. George's Banner, and as traditionally decreed, presented it to Jay Spark, President of the Students' Union. The Banner was presented to the University in 1911 through the good office of Earl Grey, at that time Governor-General of Canada. During subsequent years, the Banner has become recognized as the emblem of the authority of the Students' Union and each spring is taken to Convocation Hall to symbolize the transfer of power from the outgoing to the incoming student administration.*

Right. *The re-opening ceremonies included the traditional handing over of the "keys" from the contractor's representative to the Chairman of the Board of Governors. A surprise wrinkle was injected by Gordon Wallace, '61 Eng, Poole Construction (right) who presented Eric Geddes, '47 BCom, Chairman of the Board, with an empty bottle of 1906 Gooderham & Worts, an artifact uncovered within the framing system of the building during demolition.*

The Branches

Montreal

Right. *A social get-together of U of A graduates is incomplete without a rousing rendition of the University Song. Roger Flumerfelt, '42 BCom, had everybody in tune at the Montreal Branch meeting in November.*

Far right. *Genial host, Ted Abbott (right) had just astounded Sandra, '62 BSc(Nu) and Mike Lawrence as the alumni house party warmed in Hudson, P.Q.*

Below. *Three faithful alumni stalwarts gathered in the Abbotts' den before dinner to speak of the other numerous alumni gatherings over the years. (left to right) Jack Sylvester, '38 BSc(Eng); Jack Randle, '47 BSc(Eng), and Jeanne (Gauld) Randle, '49 BEd.*

Toronto

Left. *A 12:30 brunch on a Sunday afternoon at the Royal York Hotel drew close to 100 U of A graduates in November. There were cocktails, followed by a delectable buffet and some interesting speeches and an opportunity for reminiscences. All had been tastefully arranged by Mrs. Jessie (Carmichael) Heath, '38 BA, Branch registrar, and Dave Ellis, '48 BSc, Branch president.*

Ottawa

Right. *Green and gold decorations lent a collegiate flair to the Ottawa Branch reception and dinner at the Unicentre, University of Ottawa. Obviously delighted with the turnout were Branch president, Louise (Wilson) Estwick, '49 HEc, and Branch treasurer, Bob Beaudoin, '72 BA.*

Far right. *Chancellor Ron Dalby, '52 BSc(Eng), was principal speaker at each of the three alumni branch meetings in Quebec and Ontario. His remarks elicited animated conversation following dinner in Ottawa. Seen left to right, Dr. Doug Colton, '59 BSc(Eng), the Chancellor, and Joe Jacobson, '51 BEd, vice-president of the Ottawa unit.*

Dental Alumni Association

Below. *Dental Alumni Association Breakfast at the Faculty Club on 28 May 1977. From left to right: Dr. K. Wallace (President, DAA), Dr. W.J. Aitken, Dr. D. Collinson, Acting Dean.*
Right. *At the DAA Breakfast Dean Don Collinson (left) presents David John Brodie with the Alberta Dental Association Gold Medal.*

Alumni Class Representatives 1978

Each fall Alumni class representatives are selected from the senior class to maintain contact with their classmates in perpetuity. Several came together initially to discuss the "how to" of being an Alumni class representative. Seen with Alumni executive members, they are (left to right, standing) Gerald Weiss (Agriculture); Bob Edgar, '55 Pharm, vice-president, Alumni Association; Kerry Fulton (Mining Engineering); Alex Markle, '48 BA, Alumni Director. (seated) Vera Ursyk (Library Science); Bud Arbeau, '53 BEd, president, Alumni Association; Kathy Down (Household Economics); Susan Krys (Rec.Admin).

Alumni Homecoming
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